Tuberculosis and Health Sector Reforms in Bangladesh

A Concept Paper

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This concept paper initiates tuberculosis elimination as a multisectoral challenge. In line with the G-8 Commitment in the Okinawa Communiqué, the Millennium Development Goals and the Global Stop TB targets, the paper proposes the concept of a multisectoral action programme necessary: "To reduce by 50% the prevalence and deaths from tuberculosis by 2010".

This concept paper was prepared by Dr Bruce Currey for WHO/HQ, Geneva, in 1999 to support the National Tuberculosis Programme (NTP) of the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh (GoB) as the People's Republic of Bangladesh embarked on the Health and Population Sector Programme (HPSP), one of the first Health Sector-Wide Approaches (SWAPs) coordinated by the World Bank.

The concept paper was initiated by Dr Jacob Kumaresan, Tuberculosis Programme, WHO/HQ, Geneva, Dr J P Narain, Coordinator (HIV/AIDS, TB and other communicable diseases), WHO/SEARO and Dr Pierpaolo De Colombani, Medical Officer (TB), WHO/Bangladesh. The many professionals in the field and in the health and social sectors in Bangladesh with whom the concept paper was discussed are acknowledged in the Annex, but particular mention should be made of colleagues, Professor Quazi Quamruzzaman and Professor Mahbuber Rahman, Dhaka Community Hospital. Professor Sir John Crofton reviewed the initial report.

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## Abbreviations

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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AIDS</td>
<td>Acquired Immuno Deficiency Syndrome</td>
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<td>ARI</td>
<td>Acute Respiratory Infection</td>
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<tr>
<td>BCC</td>
<td>Behaviour Change Communication</td>
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<tr>
<td>BCG</td>
<td>Bacillus Calmette-Guérin</td>
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<tr>
<td>BIDS</td>
<td>Bangladesh Institute of Development Studies</td>
</tr>
<tr>
<td>CC</td>
<td>Community Clinics</td>
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<tr>
<td>CDD</td>
<td>Control of Diarrhoeal Disease</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<tr>
<td>CIET</td>
<td>Community Information and Epidemiological Technologies</td>
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<tr>
<td>CMSD</td>
<td>Central Medical Supply Depot</td>
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<tr>
<td>DDS</td>
<td>Drugs and Dietary Supplement</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>DOTS</td>
<td>Directly Observed Treatment, Short Course</td>
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<td>EPI</td>
<td>Expanded Programme of Immunization</td>
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<td>ESP</td>
<td>Essential Services Package</td>
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<td>FICCI</td>
<td>Foreign Investors Chamber of Commerce and Industry</td>
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<td>FPHP</td>
<td>Fourth Population and Health Programme</td>
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<tr>
<td>FWA</td>
<td>Family Welfare Assistant</td>
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<td>FWC</td>
<td>Family Welfare Clinic</td>
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<tr>
<td>FY</td>
<td>Financial Year</td>
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<tr>
<td>GoB</td>
<td>Government of Bangladesh</td>
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<tr>
<td>HA</td>
<td>Health Assistant</td>
</tr>
<tr>
<td>HEU</td>
<td>Health Economics Unit</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immuno Deficiency Virus</td>
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<tr>
<td>HPSP</td>
<td>Health and Population Sector Programme</td>
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<tr>
<td>ICPD</td>
<td>International Conference on Population and Development</td>
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<tr>
<td>IHSD</td>
<td>Institute for Health Sector Development</td>
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<td>ILO</td>
<td>International Labour Organisation</td>
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<td>IUHC</td>
<td>Integrated Upazila Health Complex</td>
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EXECUTIVE SUMMARY

It is estimated that each year 70,000 people in Bangladesh die of tuberculosis (TB). This very high death toll is over twice the official mortality estimate for the 1974-75 famine in Bangladesh, a disaster that changed Bangladesh’s development strategies for the following quarter century.

It is now estimated that every year, 300,000 people in Bangladesh develop active tuberculosis, putting an immense burden on the economy and the health system, particularly for reproductive and child health. There is an additional concern for future maternal health: the number of new smear positive cases of tuberculosis each year between 1994 and 1997 consistently appeared, ceteris paribus, to be about 50% higher in female children, aged 0-14, when compared with males of the same age group.

Bangladesh already has over 60 million people estimated to be infected with tuberculosis. Stopping the large number of tuberculosis deaths, therefore, cannot be based only on a paradigm of health care and TB control that is primarily focused on reducing further infections in the population. Improved TB control, in the sense of increasing case detection and improving the effective cure of those detected is attacking only the tip of a growing iceberg amidst malnutrition, overcrowding, and the upsurge of malaria, leishmaniasis and diabetes. The limitations of the existing TB control paradigm may have led to the growing iceberg and therefore the unsustainability of the National Tuberculosis Programme (NTP). It certainly will be even more unsustainable when multi-drug resistant tuberculosis (MDRTB) develops, together with the outbreak of HIV/AIDS.

TB control has traditionally been part of the Government of Bangladesh’s (GoB) regular health services, with NTP becoming a special project during the Fourth Population and Health Programme (FPHP July 1992 – June 1998). It successfully developed essential service facilities for tuberculosis control through all 460 rural Upazila Health Complexes (UHC). These commendable efforts raised NTP’s case detection levels from almost zero to about 60,000 per year. However, this remains a mere 20% of the estimated 300,000 new cases each year. While the programme may appear to be peddling frantically forward, in the context of the growing iceberg, it is actually fairly static.

As Bangladesh takes off economically, socially, and politically into the next century, having apparently overcome famines like 1974, NTP will have even greater challenges to confront, with tuberculosis as a major killer as well as a leading cause of death among women during their child-bearing years. TB is recognized to be the leading health problem of the most vulnerable and the poor who are specifically addressed in the goal of the reform oriented US$ 3.3 billion Health and Population Sector Programme (HPSP 1998 to 2002). There is already a cure for TB. HPSP has to use this cure effectively, not only through the public and NGO sectors, but also through the private sector and the community, during the narrow window of opportunity before the escalation of HIV/AIDS and multi-drug resistant tuberculosis.
Contrary to the increasing challenge and the opportunity offered by the HPSP, the NTP had the operational budget under its direct control trimmed for the financial year 1998-99. Rather than there being a national sense of urgency, TB control is presently in limbo as NTP changes from being managed as a separate vertical programme to integrated management as part of the Essential Services Package (ESP).

NTP is in limbo strategically because of three paradoxes:

1. **The reform paradox**: The sector-wide approach of HPSP has required the merger of all vertically managed projects. While this will lead to integrated health services, major management functions such as planning, training, procurement (including drugs), financial management, etc. of the 100+ projects are also being integrated under separate line directors. In effect, this has further, ‘centralized’ programme management, not only losing some of the flexibility needed by individual programmes like NTP, but initially reducing programme momentum and deflecting attention away from the real challenge of reducing the health burden of the poor.

2. **The log frame paradox**: The goal of HPSP is stated as: ‘the improved health and family welfare status among the most vulnerable women children and poor of Bangladesh’. TB is acknowledged as the major killer of women during their reproductive years (more than all causes of maternal mortality combined) and is long acknowledged as a disease of the poor. Neither is NTP explicitly included in HPSP Summary Log Frame, to ensure its sustained funding, nor are TB deaths among mothers, or their proxy, women of reproductive age, included as an indicator in the HPSP log frame to ensure the programme’s accountability.

3. **The sustainability paradox**: Even if NTP fully achieves its global TB control objectives of detecting 70% of the estimated new smear positive pulmonary TB cases and curing 85% of the detected cases, it is likely to continue to remain unsustainable. This is because of the 60 million people already infected in Bangladesh, so that despite its commendable achievements, NTP may not reduce in total the number of active new cases emerging or the number of TB deaths.

WHO must assist NTP to take responsibility for reducing the massive tuberculosis disease burden and death toll, As with any reform, NTP must ensure that it maximizes the opportunity of the health sector reform to achieve its goal of reducing TB mortality and morbidity, viz.: (i) NTP must build on its past successes, (ii) NTP must seize the additional opportunities of the reform process, and (iii) NTP must ensure, after the five years of additional funding in support of the health sector reform process, that the long haul to eliminate tuberculosis can be sustained. Three specific strategies, for immediate, medium and long term actions, are thus recommended to resolve the above paradoxes (see Figure 1):
Figure 1: **Recommendations for Sustained Reduction in TB Deaths**

<table>
<thead>
<tr>
<th>Shift paradigm to sustain new NTP after reforms</th>
<th>Short-Term</th>
<th>Medium-Term</th>
<th>Long-Term</th>
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<tbody>
<tr>
<td>Cross-sectoral TB Programme</td>
<td>Nation-wide TB survey (epidemiological and socioeconomic parameters)</td>
<td>Community and family based tuberculosis elimination</td>
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<tr>
<th>Broaden scope of NTP for opportunities of reform under HPSP</th>
<th>Short-Term</th>
<th>Medium-Term</th>
<th>Long-Term</th>
</tr>
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<tbody>
<tr>
<td>TB included in HPSP Summary Log Frame</td>
<td>NTP expertise tapped for preparing ESP training</td>
<td>Access to additional HPSP resources for TB as a determinant of reproductive &amp; child health</td>
<td></td>
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</tbody>
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<tr>
<th>Institutionalize achievements of pre-reform NTP</th>
<th>Short-Term</th>
<th>Medium-Term</th>
<th>Long-Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Systems Development for NTP in HPSP including mobilizing the public, NGOs, private sector, community and family against TB</td>
<td>Quality assurance by NTP of public, private, NGO, community and family TB programmes</td>
<td>Cost effective TB cures for the poor and vulnerable</td>
<td></td>
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(1) **Institutionalize NTP within HPSP**, through decentralized management and partnerships with NGOs, the private sector and existing community institutions, to rapidly reduce TB deaths amongst the most vulnerable.

(2) **Broaden the scope of NTP beyond communicable disease control** by ensuring that TB is also addressed in the reproductive and child health programmes of the ESP.

(3) **Address the paradigm shift for the NTP beyond the health sector**. The 1974 famine deaths mobilized massive development efforts to put famine in the past within the next quarter century. Similarly, the much larger number of TB deaths today should spearhead intersectoral development approaches to put TB in the past within the next quarter century.

**RECOMMENDATIONS FOR SUSTAINED REDUCTION IN TB DEATHS**

**Short-term**

- WHO needs to urgently provide technical support for health systems development as MOHFW confronts the gigantic problem of (a) dismantling the more than 100 separate vertical projects and their management systems, and (b) replacing them with an integrated management system for the Essential Services Package, similar to WHO’s smaller scale IMCI initiative. NTP is in urgent need of health systems development support to break out of its in limbo status.

- NTP should involve the private sector and the community, just as it involves NGOs, to revise the Memoranda of Understanding (MoU) to ensure increases in effective TB cures. Active community and family mobilization against TB (see Map 1), will need emphasis on an equal footing as service delivery for passive detection.
Map 1: **The Cosmos of the Most Vulnerable of Bangladesh**

This map is excerpted from the already copyrighted mapping system “Cosmos of the Vulnerable” from the research of the author. The photo-icons making up the cosmos are positioned in female or male domains relative to the bedroom or the center of the family. Photo-icons are positioned along the vertical terminator in proportion to their relative importance for both females and males. The area or size of the photo-icons represents female and male perceptions of their importance in giving identity to their cosmos. The location of each photo-icon within the female or male domain is semantic. The height or size of the typographic font for place names is also proportional to their importance.
• At the time of the Annual Performance Review of HPSP, WHO should support NTP to ensure that tuberculosis is inserted in the HPSP Summary Log Frame, together with an appropriate verifiable indicator, e.g. ‘reduced female mortality from tuberculosis in the reproductive age group’. At the household level, an appropriate indicator and its monitoring system can be developed with the support of the CIET survey.

• WHO should assist NTP to set up a High-Level Committee to guide the process of eliminating TB from Bangladesh through intersectoral alliances. It would be desirable if this High Level Committee is chaired by the Honourable Prime Minister and its Secretariat be headed by the Chairman of the Parliamentary Steering Committee on Health, with members drawn from the institutions of civil society, relevant ministeries, NGOs, unions, media, industry, commerce, and construction firms, etc. as well as development partners and investors, all of whom have either direct or indirect roles in TB control and elimination in Bangladesh.

**Medium term**

• WHO should technically support NTP to further strengthen its capacity for quality assured DOTS services.

• NTPs’ quality assurance capacity needs to extend over the NGO, private sector and community institutions as well.

• The Line Director, Human Resources, MOHFW, should draw on NTP expertise and personnel for revising the training programme for ESP service delivery and supervision. TB control and elimination, particularly its role in reproductive and child health, is an important component of the ESP.

• The proposed High Level Committee on Tuberculosis should support NTP to access additional funds and to undertake a nationwide survey. The nationwide survey would include not only the traditional biological parameters of TB, but would also be stratified for socio-economic parameters, urban and rural, gender, age, assets, housing conditions, ecological integrity and particularly occupational and mobility categories. This survey would identify the key parameters and the baseline for assessing the effectiveness of the strategy for community-based tuberculosis elimination.

**Long Term**

• The present system of drug subsidy is non sustainable for the poorest and does not necessarily deliver all the subsidy to the poor. Instead, subsidizing effective TB cure, only among the poor, would, in the long term, be sustainable. With WHO’s technical support, the NTP should be able to identify a more cost-effective system for curing TB among the poor, e.g. rewarding those who ensure effective cure.
For each annual plan under HPSP, WHO should very actively assist NTP to draw on additional HPSP resources, e.g., from the reproductive and child health budgets, because TB is a major determinant of reproductive health for both men and women.

The Communicable Disease Control and the Health and Sustainable Development Clusters of WHO should jointly support the High Level Committee on Tuberculosis in Bangladesh. Bangladesh should be taken up as a test case, through an appropriate mix of incentive programmes for effective TB cure spearheaded by local community-based institutions with both active case-finding in families and effective cures strengthened by community health workers to ‘eliminate’ TB.
1. THE POOR AND VULNERABLE: CHALLENGE FOR NTP

The Health and Population Sector Programme (HPSP) seeks to address the health needs of the poor and vulnerable, particularly women, through health sector reform in Bangladesh. This concept paper is set in the context of the ‘cosmos of the most vulnerable in Bangladesh’ (See Map 1). The map helps visualize the world of the rural poor from a gender perspective and brings out the relevance, in that world, of present health services.

To be sustainable in the context of the poor and vulnerable, NTP needs to focus on three operational dimensions, viz. (i) the transmission of tuberculosis, (ii) the development of active tuberculosis, and (iii) health care for curing active tuberculosis. These three dimensions are elaborated below to convey the enormous complexity of the TB challenge in Bangladesh.

Simply continuing the NTP only as a control programme is an insufficient response to a challenge that is compounding in size and in complexity every day, leading to over 70,000 TB deaths each year.

1.1. The Transmission of Tuberculosis

It is hardly surprising that over 60 million people in Bangladesh are estimated to be infected with tuberculosis. Conditions abound for the transmission of tuberculosis, primarily, but not only by aerosol dispersion among people living in poor crowded conditions in its tropical monsoon climate. The country’s 144 million people are increasingly crowded together in poorly lit and poorly ventilated dwellings, in the shade of bamboo, trees, and orchards. Their densely compacted settlements cling to raised mounds amidst the deltaic flood plain which constitutes 80% of Bangladesh’s 147,570 sq. km. Communities of vulnerable and poor, like migrant labourers, fishermen, traders, and the minority bedées (nomads), live and sleep crowded together in rough encampments and on boats along the rivers and waterways of the delta. These crowded and hygienically poor environments are naturally conducive to TB transmission.

During the monsoon, the already high density in settlements effectively increases manifold as the population retreat from the flood plains to higher ground, often to poorly constructed temporary shelters. As the rains and rivers flood the country annually, these densely settled higher grounds, that appear from the air like archipelagos throughout the

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1 Depressed immunocompetence amidst poverty, malnutrition and HIV/AIDS increases the risk of other forms of transmission, e.g. (i) aerosol from livestock, (ii) milk consumption, particularly from imported breeds (Department of Animal Health, Bangladesh Agricultural University) and (iii) possibly even from human sexual transmission.

2 All underlined items in this section are indicated on Map 1 as being important in the lives of the most vulnerable. Map 1 is excerpted from a previously copyrighted mapping system of the cosmos by the author.
flooded deltaic ecosystem, are conducive to the rapid transmission of tuberculosis. An unusual upsurge of tuberculosis induced meningitis among children was reported after the 1998 flood.  

Even without floods, the average poor family of over five members lives in very crowded conditions in a *jhupri*, a small, one room, all purpose shack or thatched hut, which also serves as the family bedroom. Women traditionally live in the confines of the *jhupri* and its immediate grounds under the shade of trees and vegetation and close to their agnatic family. If dry fuel is available, women boil milk for considerable periods. Males, under pressure to earn incomes, are more mobile and travel out to other rural, and increasingly, to urban destinations, living in crowded messes and urban slums (See Annex vi). Milk traditionally pooled without testing by the informal sector, is increasingly transported to urban areas for sale by NGOs. 

The cosmos of the vulnerable gives a general description of rural Bangladesh. It shows the importance of mobility for employment and the strong linkages to urban areas in the male cosmos. The gender sensitive cosmos shows that the Hospital (Upazila Health Complex) where NTP clinics were located during FPHP, is very much in the male cosmos. The Family Welfare Centre at the union level (see Figure 2), the traditional focus for family planning - now reproductive health - which should join with NTP in HPSP, is in the female cosmos. The family, particularly mothers like Lokman’s Ma and Alauddin’s Ma (page 13) as an institution provides care throughout the community. 

Congested living is a way of life for the urban poor, whether in slums or on the street sides of Dhaka, Bogra, Dinajpur, Rajshahi, Rangpur, Kurigram and Ulipur, under scavenged plastic sheets or in refugee camps. The main refugee populations from amongst the poor in Bangladesh are, however, its ‘environmental refugees’. The massive annual river erosion of the char areas and the floods, cyclones and tidal surges elsewhere regularly destroy the *jhupris* of the poor. The homeless millions are then forced to seek shelter in the already crowded homes of relatives or on the crowded river embankments or in urban areas. All of these natural processes that affect the daily lives of the poor continuously promote conditions for the rapid transmission of tuberculosis. 

Moreover, the geographical biases of local and foreign development investment decisions, e.g. in cash crops like tobacco in certain regions; bridges and ports; deep tube-wells for agriculture in other areas; subsidies for industry (e.g. the urban garment industry); particular forms of research and development (e.g. high yielding varieties of rice in irrigated areas), and credit programmes for the poor, all draw the poor, particularly male labourers, but increasingly also females, into crowded living conditions favourable for TB transmission (See Fig. 2). The temporary shacks on rural work sites, the camps for food-for-work programmes, the very cramped sleeping shelters in brick-fields, the messes and bustees (slums) for urban labourers and rickshaw pullers, all represent perfect environments for the rapid transmission of tuberculosis. Moreover, the migrant labourers may carry tuberculosis, STDs and HIV/AIDS back to their wives and families in their crowded village homes.
The figure shows that in some relatively stable communities like the above, the most vulnerable, in this case the “poor” and “very poor”, may have over 200 person days per year of absence away from home, often in other districts, in search of employment.

To be sustainable, NTP needs to address the conditions that promote the rapid transmission of tuberculosis, particularly among the poor. NTP must involve the people themselves as well as sectors other than health for a much wider and more effective approach to reducing the transmission of TB.

1.2. The Development of Active Tuberculosis

Over 300,000 people are estimated to develop active tuberculosis and become ‘new cases’ each year in Bangladesh. The development of active disease among the 60 million Bangladeshis who carry tuberculosis infections is caused by the synergy of erosive forces on the vulnerable: poverty, malnutrition, repeated pregnancy and childbirth, aging, drug-use and infections such as HIV/AIDS, all of which reduce the immune competence of the poor. The 60 million TB hosts are assumed to be largely among the poor. The potential for these synergistic forces to increase the already massive disease burden with secondary tuberculosis through both ‘endogenous exacerbation’ and increased risks of ‘exogenous reinfection’ is further strengthened by the new mutant strains of tuberculosis.

Attempts to boost the immuno-competence of Bangladeshi children through BCG vaccination has been the most successful part of Bangladesh's Expanded Programme of Immunization, even during flood years like 1998. This child health programme provides limited immunity for malnourished children, but needs further strengthening, given the disabling cases of TB among girls in particular.

The erosive synergy of environmental, demographic, economic, social and political forces has left 25 million people in Bangladesh with no field or cultivable land. Ten million people do not even own the few square feet comprising the floors of their homes for almost six people on average. About 60 million people now live below the poverty
and about 25 million of them live in extreme poverty\textsuperscript{122}. The per head daily intake of calories in rural areas has been declining since 1962-64, just before the first nationwide TB survey. Now only one quarter of all households receive the required calories. Children and pregnant women are among the most deprived sections of the population as far as intake of calorie, protein and fat are concerned\textsuperscript{63}. Whether through the genetic pressures of poverty and diseases like tuberculosis in previous generations, or the existing pressures of patriarchy and early marriage, or reproductive ill-health including tuberculosis, but still\textsuperscript{142} 50\% of Bangladeshi children are born as ‘low-birth-weight’ babies with reduced life chances and increased vulnerability to infections. These low birth weights in turn contribute to Bangladesh’s high infant mortality rate of 79 per thousand and the low life expectancy of only 58 years for both men and women\textsuperscript{142}.\textsuperscript{4}

Amidst these conditions of absolute poverty\textsuperscript{3}, the already high antigen load in Bangladesh is rapidly being exacerbated by increasing drug use, particularly intravenous drugs, among the socially excluded\textsuperscript{71} in the major cities e.g. Dhaka, Narayanganj, Chittagong, Khulna and Rajshahi. HIV seropositivity among such high-risk users is estimated to be around 5\%\textsuperscript{47}, the trigger point for the potential “wildfire” spread through the general population, particularly through migrants returning home (See Annex vi). This wildfire spread of HIV along with diabetes and the resurgence of malaria and leishmaniasis will drastically reduce immuno-competence and further accelerate the already massive disease burden of 300,000 new cases of active tuberculosis each year in Bangladesh and also potentially in Western countries receiving Bangladeshi migrants\textsuperscript{56, 94}.

NTP will need to change from the current reactive “control” approach to an aggressively proactive “eliminate” approach that can effectively minimize the number of new TB cases each year.

1.3 Health Care for Tuberculosis

Tuberculosis case detection had increased to about 60,000 cases per year by the end of FP\textsuperscript{26, 141}. The increase is significant, given the earlier very low case detection rate. The role of NTP and WHO’s technical support towards this increase need recognition. However, this increase still covers only a third of the estimated 300,000 new cases each year. Given 60 million people already infected with tuberculosis, NTP will be fighting a losing battle\textsuperscript{5}, if it does not change its present operational strategy to a significantly more aggressive one.

While the district hospitals and special TB clinics played a significant if decreasing role in caring for and curing tuberculosis under FP\textsuperscript{12}, the Upazila Health Complex (UHC), identified locally as the hospital, was increasingly promoted by NTP as the focus

\textsuperscript{3} The few rigorous case studies like Reference 132 indicate still relatively low levels of MDR\textsuperscript{T} in Bangladesh, but such case study areas like rural Netrakona, although a source of domestic servants and commercial sex workers for Dhaka is relatively stable relative to the so called ‘high risk’ urban groups. Per capita intake of 2,122 cal. in rural areas and 2,112 cal in urban areas

\textsuperscript{4} Although earlier documentation shows five-fold differences in mortality data between the rich and poor\textsuperscript{59, 62, 89}, differentiated mortality figures are still to be maintained to advocate the unacceptable conditions of the poor and vulnerable.

\textsuperscript{5} In countries like the United Kingdom, effective treatment of active cases on the already declining curve of active cases and morality helped with the battle among the younger cohorts, but treatment was accompanied by improvements in housing, nutrition and public health.
of care, with both laboratory support as well as the supply of free TB drugs. The ‘cosmos of the vulnerable’ (map 1) suggests that the hospital or UHC is within the ‘male cosmos’ and not readily accessed by females. The Family Welfare Clinic (FWC) at the Union level on the other hand is more readily accessed by women, particularly for family planning and maternal and child health care. Under HPSP it is proposed that FWCs will provide ‘one stop shopping’ for the Essential Service Package.

NTP should ensure that women have access to both detection and full TB care at the FWCs for themselves and their families.

The ‘cosmos of the vulnerable’ also emphasizes the provision of health care by the household, family, relatives and self. Care is provided, often by the mother at the daughter’s and the son-in-law’s house, and also at the son’s house even when he is far away. Care in the household, and by the community constitutes a major proportion of health care for the poor and involves both direct as well as indirect costs. Yet household care is still systematically excluded from the present National Health Accounts studies.

NTP needs to tap the existing potential of household and community care to ensure effective use of DOTS for much higher cure rates.

2. HEALTH SECTOR REFORM AND NTP

2.1 The Fourth Population and Health Project (FPHP), 1992-1998

A variety of private and informal institutions in Bangladesh have implemented anti-tuberculosis care with differential effectiveness for many decades. Formal anti-tuberculosis services were introduced in Bangladesh in the mid 1960s. NTP only gained special project status during FPHP. The project “Further Development of the TB/Leprosy Control Services”, with WHO support, was one of 66 separate projects in the FPHP. The project successfully developed essential service facilities for tuberculosis control through all 460 Upazila Health Complexes. With its own project director and vertical line management, the primarily public sector project operated only within the health wing of MOHFW.

The external FPHP Evaluation in 1998 particularly commends NTP for: (i) Its focus on a poverty-related disease; (ii) marked increase in case-finding from less than 10% to over 30%; (iii) TB cure rates in excess of 75%; (iv) largely effective innovative communicable disease strategy for TB; (v) deliberately structured links with NGOs; and (vi) successful drug procurement under the auspices of the vertical project.

At the end of FPHP, however, there were suggestions that although it had contributed towards reductions in infant and child mortality and fertility, there were: (i) no substantive declines in maternal mortality; (ii) persisting gender discrimination as reflected in the continuing differences in health status between women and men and boys and girls; (iii) persisting poverty differentials; and (iv) the most worrying poverty/health differential concerns for the most disadvantaged groups. The final
evaluation of FPHP also emphasized ‘the role of health activities outside FPHP and other socio-development factors in improving health status’.

2.2 The Health and Population Sector Programme (HPSP), 1998-2002

HPSP in which MOHFW is partnered by a consortium, has the following main components: (1) Essential Service Package (ESP) with focus on maternal health; (2) Poverty and Gender Focus; (3) Decentralization; (4) Sector Wide Programme; (5) Reorganized Services to deliver ESP; (6) Improved Hospital Management; (7) Partnerships with NGOs and the Private Sector; (8) Cost Recovery with subsidies for the most vulnerable; and (9) other Essential Health Care. HPSP has encouraged stakeholder participation from the early preparation stage. It also specifically aims to encourage community participation and programme accountability through Health Watch Groups. The sector-wide HPSP is now owned by the MOHFW and is supported by partner agencies, including WHO.

The Essential Services Package (ESP) within HPSP is a tool for delivering primary health care from the community level upwards. NTP is located under ‘communicable disease control, under ESP in order to deliver cost-effective care at the community level and up through the referral chain to the Union, Upazila, and District levels (See Figure 3).

While the Ministry of Health and Family Welfare implements the changes needed from the project approach of FPHP to the sector-wide HPSP, NTP together with the other service delivery projects risk disruptions. Integrated management will in reality, replace vertical project management where several programmes are managed together. The individual needs of NTP, e.g., training, timely procurement, logistics, support for transport of sputum samples and drug supply, information systems, for confirming and following up positive cases, etc, may be difficult to meet as different line Directors will be involved. Equally NTP will have to adjust to the need for integrating requirements with other programmes. As these organizational and management systems changes are being planned and gradually implemented, the NTP will inevitably lose momentum. WHO’s support will be essential for minimizing this loss.

The move away from the project approach should be seen as an opportunity for NTP to expand its resource base, through coordinating with other programmes, including reproductive and child health and HIV/AIDS, for integrated training, decentralized management, behaviour change communication, etc. Not only will the potential for resources increase, but all four programmes will be strengthened and benefit from such coordination. Just as NTP has linked with NGOs, it needs to take advantage of the public-private partnership opportunity under HPSP and the specific DFID-funded Public-Private Partnership project, to ensure quality control of the very large proportion of TB cases treated by the private sector. Similarly, it needs to take advantage of the opportunity for intersectoral alliances under HPSP to involve key sectors in TB elimination. The opportunity for behaviour change communication to strengthen community participation in NTP and for involvement of civil society to eliminate TB needs to be captured by NTP with assistance from WHO.

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6 Membership of the consortium, led by the World Bank, has varied over the past 20 years of support for health and population. For HPSP, some bilaterals, e.g. DFID, the governments of The Netherlands and Sweden contribute towards the entire HPSP. Others, e.g. DFID, also fund both projects within the HPSP. Others, e.g., GTZ and CIDA, are likely to fund projects only.
There will be single line management up to the upazila level in the first stage, (MOHFW Programme Implementation Plan, PIP).

Single line management will extend upwards to the central Ministry of Health and Family Welfare by the end of HPSP.

The FWAs and HAs will together provide the ESP in households.

TB services will be provided by both FWAs and HAs.

At the community level, Community Clinics (CCs) will provide ‘one stop’ health services.

The CCs will provide TB treatment.

At the Union Level, the FWCs and the Health Sub-Centres will also provide primary level ESP, with secondary level services available at the Upazila Health Complex.

Note:

(1) sputum smearing, now available at the upazila level, should instead be made available at the Union level, in order to make it more accessible, particularly for the poor and vulnerable.

(2) The organogram above describes the management linkages as operated below the district level during FPHP.

NTP, with the support of WHO, should ensure that the resources of both health and family planning wings are fully used for effective cure of tuberculosis during HPSP.
3. LESSONS FOR NTP FROM ANALOGUES

Two analogues of Health Sector Reform provide strategic lessons for NTP in Bangladesh as the reform-oriented HPSP takes off. One analogue is from an earlier period in Bangladesh when the vertical malaria programme was merged into the general health programme. The second is from Zambia where the vertical NTP forms a major component of the reform-oriented National Strategic Health Plan.

Integration of the Malaria Eradication Programme in Bangladesh in 1977\(^9,64\)

The vertically managed Bangladesh Malaria Eradication Programme, with a large field base for both home visits to detect malaria cases and for field spraying to control mosquito breeding, became part of the Integrated Upazila Health Programme in 1977. The integration process began from the Upazila up towards the Centre. By 1984, all malaria personnel from the Upazila upwards had been integrated with only an advisory body at the national HQ. Subsequent malaria control work at the thana and district levels was undertaken by people who did not have technical expertise in malaria. Further, the old malariologists who were integrated into the health services delivery system had been retiring, leaving only about four or five of them still in the programme. By 2000 AD, even these remaining officers would have retired and ‘instead of eradicating malaria, the malariologists would have been eradicated!’ Within the health services, understanding of the socio-ecological niches involved in malaria control had been greatly reduced and preventive spraying was stopped with the banning of DDT. Because funding was available only for curative care and not for prevention, the programme operated a form of curative crisis management at present.

As a consequence of the integration and loss of vertical expertise, programme management and effectiveness weakened considerably. Malaria re-surged in the Chittagong Hill Tracts, and in the Cox’s Bazaar areas. In 1993, 1994, and 1995 there were severe malaria outbreaks in these areas – which were poorly reported in GOB surveillance statistics. With the acute shortage of trained people, poor surveillance system and an extremely weak malaria control programme, repeated outbreaks of malaria may be expected in Bangladesh.

Health Sector Reform and NTP in Zambia\(^8,17,128\)

Zambia, a landlocked country five times as large as Bangladesh, with an average GNP 50% higher than Bangladesh and with only one twelfth of the population, embarked on Health Sector Reform through the National Strategic Health Plan (Investment Plan) 1995-1999. In Zambia, HIV prevalence in ante-natal care attendees is already between 20-30% in both urban and rural populations. There is already a co-epidemic of TB and HIV with deaths due to HIV estimated at 100,000 and new HIV infections at 180,000 per year.
Zambia, unlike Bangladesh, was driven to health sector reform by massive extreme debt due to the falling copper prices and rising energy prices in the 1970s. The country’s run-down health infrastructure was faced with fighting endemic malaria together with epidemics of cholera, TB and HIV/AIDS. There was a chronic shortage of drugs and medical supplies. Health workers were demoralized. Population growth was uncontrolled. The health management structure was unresponsive to prevailing health needs. The Government of the Netherlands funded the NTP in Zambia until the end of 1997. The health sector reform programme was not dissimilar to Bangladesh’s, but AIDS/STD and tuberculosis formed one of the six main health components.

Overall, however, analysis of health sector reform and performance of an integrated NTP in Zambia has not been positive with regard to TB control. The main conclusion is that the existing system for technical tuberculosis support has been removed, while no functioning alternative has yet been put in place. While the roles and relations between the health boards at the national, regional and district levels have still to be further developed, HSR has a lot to offer to improve the impact of tuberculosis control at the district level, provided that a number of opportunities are developed. When technical expertise on tuberculosis control, available in and outside Zambia, is incorporated in the HSR at the national and regional levels, the negative effects of removal of the vertical NTP can be averted.

The two analogues emphasize the need for continuous human resource development and for maintenance of a knowledge bank in order develop broad-based anti-tuberculosis strategies amidst health service reforms like HPSP.

4. THE STRATEGIC CHALLENGES FOR NTP IN HPSP

A Challenge from Government:
In an interview on the first day of 1999, the Chairman of the Standing Committee on Health and Family Welfare in the Bangladesh Parliament stressed that the Government of Bangladesh was “thinking about the complete eradication of tuberculosis”. He emphasized that the Honourable Prime Minister, as Head of the National Health Council, was even more committed to the complete eradication of tuberculosis in her efforts to raise the status of women and to improve mother and child health. The Committee Chairman noted that while previously, “Jar ache Jokkha, Tar nai Rokkha (a person who has tuberculosis, was a person for whom death is inevitable), now there is an effective cure for Jokkha.

The Chairman, himself a strong supporter of the fundamental rights of women, pointed out that women earning with the help of credit supported their families. When educated, these women created a demand for contraception and for the health of their families. The Chairman of the “Highest Body on Health in Bangladesh”, from his visits around South Asia and China is aware of the dangers of HIV and multi-drug resistant TB in Bangladesh. He sees the need for improved reproductive health preventing the spread of HIV-AIDS, as part of the future TB “eradication” strategy for Bangladesh. The Chairman is well briefed on the Health and Population Sector Programme. His broad perspective encapsulates the important assumptions of the HPSP logical framework in the goal...
statement: “Improved health and family welfare status among the most vulnerable women and children and poor of Bangladesh”. He specifically requests the National Tuberculosis Programme to brief Members of the Standing Committee on Health on the exact position of tuberculosis in the country.

A Challenge from the People of Bangladesh: Lokman’s ma and Alauddin’s ma

Lokman, whose own mother had died of tuberculosis (jokkha), told the story of another TB sufferer in the community, Alauddin’s Ma – a story corroborated by village elders attending an MOHFW-NGO-EPI outreach centre. Whenever her cough gets bad, they take Alauddin’s Ma to the local quack for medicine. Things get better for a while, but then deteriorate into worse coughing, and they go back to the quack again. They did go to the medical doctor in the Bazaar who told them to go to the Upazila Health Complex for medication. But if they go to the health complex, they will be handed three pills and sent away without even a check-up. Whenever they request the government doctor for a check-up, they are first asked to pay Tk 40. Then the doctor does the check-up, but all they get is a slip to go and buy their own medicine. Alauddin’s Ma cannot afford this and so has not sought treatment for her TB at the UHC.

While this latter challenge from the field was but one focus-group discussion recorded in a community level MOHFW-NGO-EPI outreach centre in January 1999 in a very difficult-to-reach area of rural Bangladesh, it does provide insight and support for issues behind the WHO estimate of over 60,000 tuberculosis deaths in Bangladesh each year (26,141). It emphasizes not only the health burden from TB of Alauddin’s Ma, but also the burden of the death of Lokman’s Ma from TB. Neither the death nor morbidity of a mother from TB is included in the MMR indicator used by HPSP.

The Strategy for NTP in HPSP must make the programme accountable to both the challenges from the people and people’s representatives in Bangladesh 7.

5. TB CONTROL OR ELIMINATION FOR NTP

Tuberculosis can be cured, yet there are over 70,000 estimated deaths per year in Bangladesh. A scientifically proven effective intervention, DOTS, has been available for over a decade. It is very much cost-effective at about US$11.00 per patient54. In Bangladesh, the overall cure rate for TB cases registered in the DOTS programme is over 80%. Just over 30% of the estimated new cases however are detected by the NTP each year26. Given the existing 60 million people already infected with tuberculosis26, the addition of 300,000 new cases each year and the expected increase in drug resistant TB as HIV/AIDS increases by the end of HPSP, TB control will no longer be sustainable (treatment of MDRTB is much less effective and costs considerably more)55. TB in Bangladesh is growing out of control, but there is a strong desire from the people and Parliament in Bangladesh to move firmly beyond the confines of the short-term vision of a ‘control’ programme, to a long-term commitment to eliminate TB. Some tuberculosis

7 The Secretary LGRD (76) has located a gazette notification that all local government workers, including health workers should report regularly to the Union Parishad. Social mobilization NGO leaders49 are actively pushing for greater accountability particularly for women’s health.
specialists in Bangladesh, however, still see the need to continue with tuberculosis ‘control’. Given the enormous size of the challenge, they view TB ‘elimination’ as presently impossible.

The annual TB death toll, mostly of adults, mothers like Lokman’s and family bread winners\textsuperscript{92} is several times higher than that from the mega-flood disasters of 1988 and 1998\textsuperscript{93}. It is twice the number of deaths reported officially during the 1974-75 famine in Bangladesh, an event that, once internationally recognized, triggered massive aid flows of approximately US$2 billion per year from the international community, and which has subsequently directed national development policies and plans for the last quarter century. Why then is TB in Bangladesh not receiving the attention and priority it deserves in HPSP and among development partners, particularly partners with Bangladeshi immigrant communities\textsuperscript{94, 56}?

Without a strategy for the long haul towards elimination, continuation of NTP as a control programme only, or ‘business as usual’, given the 60,000 annual deaths and 300,000 new active cases each year is not just unethical, it is both irrational and unsustainable.

TB ‘elimination’ in Bangladesh would require a reduction in incidence to somewhere like the United States target of less than one case per 100,000. That means a reduction to less than 2% of the existing Bangladesh TB case load. This would still leave 1,230 cases of TB each year.

NTP must immediately confront the problem of meeting this challenge of TB elimination. NTP must devise a strategic plan accountable to people which demonstrates how to eliminate tuberculosis through a combination of international, national and community resources. It must capture the opportunities which HPSP offers by:

- Drawing on both the reproductive and child health allocation within the HPSP budget, as well as the additional budget\textsuperscript{3, 68} planned for HIV/AIDS (as both are related to TB), in order to fight TB on the scale required. Like the National HIV/AIDS Campaign\textsuperscript{48, 89} NTP must engage strongly with the private sector and community institutions which treat the majority of TB cases.

- Tapping the significant resource allocations under HPSP for “behaviour change communication” (BCC) and to include TB in the BCC programme in the HPSP summary log frame. Most of the behaviour change component in HPSP is focused on reducing maternal mortality and on ‘violence against women’. Tuberculosis should be seen as the silent violence which kills mothers like Lokman’s through all their reproductive years, not only during the 20% of their reproductive years when they are pregnant. The World Bank, which coordinates donor resources for HPSP, estimates that tuberculosis kills more women than all causes of maternal mortality combined\textsuperscript{27, 138}.

- Shifting the present TB control programme to involve more sectors, not only local government, but also housing, planning, education, food, agriculture, water, flood-control, livestock, social welfare, environment, planning,
transport and communications, labour and manpower, and environment. This intersectoral approach is essential because TB is primarily a disease of the poor.

According to the Director-General’s message in the World Health Report 1999 (142) the first challenge to be addressed to improve the world’s health is to ‘reduce greatly the burden of excess mortality and morbidity suffered by the poor.’ – for all multilateral partners, that should mean first and foremost, the elimination of tuberculosis in Bangladesh.

6. MANAGING THE TRANSITION OF NTP INTO HPSP

The singular emphasis of NTP on the TB control services was acknowledged to be successful in FPHP. The challenge under HPSP is firstly to institutionalize the management of these services in the transition from vertical project management to integrated management of TB as one element of the Essential Services Package where the management functions for NTP are now divided under different line Directors. The second management challenge for NTP is to meet the broader HPSP goal of ‘improved health and family welfare status among the poor and most vulnerable women and children’.

The management challenges being reported during the transition phase from FPHP to HPSP are:

- HPSP is expected to bring about reform over a period of five years through a “learning by doing” process. The annual budget approval process of the Ministry of Finance has not been flexible to accommodate this “learning by doing” process, leading to long delays in disbursement of salaries and operational budgets.

- With the dismantling of projects and project offices, the management skills of Project Directors were lost and at the same time new job descriptions written for the new Line Directors, e.g., for planning, finance, human resource development, procurement, information, etc. who then had to be trained quickly in the new systems of sector-wide programme management. This led to major delays in programme implementation, including NTP, in the first year of HPSP.

- HPSP aims for decentralization. Initial experience by NTP and other sub-programmes of ESP shows that the move towards integrated ESP management has in reality, led to greater centralization of authority under the Line Directors, e.g. training for the TB programme is no longer under the control of NTP, but under the Line Director, Medical Education and Human Resources Development, while drug supplies are under the control of the Line Director for Supplies and Logistics. The person responsible for the NTP is lower down in the hierarchy than were past Project Directors, and has to process approval for project activities through several different Line Directors. This delays project implementation.
While dissolving of the many Steering Committees for projects has reduced time spent at meetings by MOHFW senior management and other health veterans, the important governance functions of these Steering Committees need to be incorporated within the new management system for HPSP.

Responsibility for annual tuberculosis drug procurement needed to be transferred to the Director, Central Medical Supply Depot (CMSD) for timely indenting and procurement. NGOs and others partnering NTP and so receiving subsidized drugs through MOHFW, are anxious about the continuity of supply annually, particularly at the district level. The MoUs with the NGOs and many other new partners need to be renewed and new MoUs signed with those entering the partnership, e.g. Medecins Sans Frontieres in the Chittagong Hill Tracts52 (See figure 3).

The international GoB-WHO Review of the National Tuberculosis Programme in 199754 complemented the effectiveness of NTP and recommended continuity of services, as under the FPHP project, until 2000. Unfortunately, the new context of HPSP, and the new funding mechanisms have meant that this recommended two years of continuity will be disrupted. There has, therefore, been a hiatus, with varying forms of crisis management for securing drug supplies, limited programme supervision, other management support and programme monitoring.

HPSP envisages further decentralization of TB case-finding and treatment to the upazila, union, and community levels over the five year HPSP period. However, changes in the role of the TB hospitals and clinics at the district level should follow a full government review and possible linkage with the DFID Improved Hospital Management Project8 given that in 1997, 57.5% of all TB cases officially detected in Bangladesh were still being recorded by these TB clinics26.

The move towards the private sector is inherent in HPSP. The bulk of tuberculosis treatment in the past has been within the private sector7. However, training and human resource development for TB in HPSP still remains strongly within the public sector54 (except for the DFID Private-Public Partnership project9 and private sector training institutions like Dhaka Community Hospital73,74,77).

The principal coordinating office of the National Tuberculosis Programme itself is housed in a separate building in the Tuberculosis and Leprosy Control Compound some distance from the Line Director (ESP) and the Programme Director (Communicable Disease Control) offices in Mohakhali. The NTP is physically located even further from the National Tuberculosis Reference Centre at Shyamoli, Dhaka. This distance, in the context of crowding, worsening traffic congestion and communication problems of Dhaka is serious.

8 The purpose of this DFID project is to improve the quality, efficiency, and access of hospital components of ESP, for the poor, particularly women and children.
9 The purpose of this DFID project is to improve access for the poor to good quality ESP care through the private sector.
These operational issues are being coped with through various forms of crisis management. At the initial stage of the Health Service Reform process, NTP is best described as operating in strategic limbo. Operational problems require aggressive, strategic planning by NTP, with the support of WHO in order to place tuberculosis as a curable disease, in the forefront of the public arena for elimination over the next quarter century.

7. THE STRATEGIC SHIFT NEEDED TO MEET THE CHALLENGE OF TUBERCULOSIS

7.1 The Challenge

The challenges faced by NTP in Bangladesh are that 60 million people are already infected with tuberculosis, 300,000 new active cases of tuberculosis occur each year, and 70,000 die from tuberculosis each year.

Figure 4: The strategic shift needed to meet the challenge of tuberculosis

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Ownership and Control
Donor Project  →  MOHFW

Drug Supply System
International Drug Companies  →  NTP Quality- Drug Companies

Drug distribution systems
Government Drug Distribution System  →  Private Drug Distribution System

The provision of health care for tuberculosis patients should include both

Health Sector
District TB hospitals
TB clinics
Thana
Health centres
MOHFW Health workers
TB+Leprosy NGO

Cross-Sectoral
Private doctors (7,73,77)
Quacks and pharmacies
Social mobilization (36,49,93) and
Health NGOs (21,49,78,84)
Relatives and friends
Self
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7.2 Strategic shifts needed to meet the challenge

Strategy 1

Institutionalizing NTP within HPSP, through decentralized management and partnerships with NGO, private sector and community institutions, to rapidly reduce TB deaths amongst the most vulnerable.

Background:

- NTP had its own vertical project management system under the FPHP, with the Project Director commanding all project resources.
- NTP established a highly commendable TB control system with services provided by both MOHFW and NGOs, under agreed Memoranda of Understanding.
- Even at a subsidized rate, it costs NTP approximately US$15 per patient for effective TB treatment.

Issues:

- The vertical NTP has been integrated into the Essential Service Package. Its management functions, however, have become fragmented under different Line Directors, leading to a loss of programme momentum.
- Loss of programme momentum compounds the urgency of TB control, particularly as the effectiveness of NTP has been limited to the tip of the TB iceberg. The iceberg is growing rapidly with (i) globalisation and deepening inequality, (ii) increasing HIV infections, and (iii) increasing drug resistance. NTP will be fighting a losing battle if it does not respond urgently with strength and comprehensiveness.
- The majority of TB service providers, i.e., the private sector to whom the poor and vulnerable go in the first place, are outside NTP. They do not have the incentive of subsidized drug supplies to ensure effective TB treatment.

Recommendations:

- WHO needs to urgently provide technical support for health systems development as MOHFW confronts the gigantic problem of (a) dismantling the more than 100 separate vertical projects and their management systems, and (b) replacing them with an integrated management system for the Essential Service Package (ESP), similar to WHO’s smaller scale IMCI initiative. The NTP is in urgent need of health systems development support to break out of its in limbo status.

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10 It is not clear whether this figure of US$15, includes the length of therapy to effectively cure tuberculosis. Although low, relative to the burden of TB, and particularly relative to the low cost effectiveness of treating MDR-TB (US$250,000), is still a large amount even to be shared by the very poor in Bangladesh.
WHO should technically support NTP to further strengthen its capacity for:
- Quality assurance of tuberculosis/HIV/AIDS and MDR-TB diagnosis;
- Quality assurance of standard drug and care regimens for tuberculosis/HIV/AIDS; and MDR-TB.
- NTPs’ quality assurance capacity needs to extend over the NGO, private sector and community institutions as well.
- The present system of drug subsidy is unsustainable for the poorest and does not necessarily deliver all the subsidy to the poor. TB drug subsidy is specifically proposed for the poor during HPSP, but only until 2002. Instead, subsidizing effective TB cure, particularly among the poor, would in the long term be sustainable. With WHO’s technical support, NTP should be able to identify a more cost-effective system for curing TB among the poor, e.g. rewarding those who ensure effective cure.

Strategy 2
Broadening NTP’s remit beyond communicable disease control by ensuring that TB is also addressed in the reproductive and maternal health programmes of the ESP.

Background:
- The principal verifiable indicator for the HPSP goal is the maternal mortality ratio. MMR only includes deaths to women of reproductive age from pregnancy-related causes, i.e., in the 252 days of pregnancy and the 42 puerperal days. It does not include the 30,000 deaths per year of mothers (like Lokman’s Ma, see page 10) from other causes like tuberculosis during their reproductive years.
- HPSP Implementation Plan focuses on women’s health. In its analysis of maternal and women’s deaths, there is no mention of deaths from tuberculosis.
- During FPHP, the Union level FWCs were able to meet some of the reproductive health needs of poor women (See ‘Cosmos of the Vulnerable’, Map No. 1).

Issues:
- TB kills more women of reproductive age than all causes of maternal mortality combined. In South Asia, TB is increasingly being recognized as a reproductive disease. Despite the emphasis in HPSP on reducing maternal deaths and despite the family health and economic consequences resulting from the deaths of mothers, TB is not included in the indicators for monitoring HPSP impact.
- During FPHP, NTP personnel developed reputed expertise in reducing tuberculosis ill health and mortality at the Upazila level and below.
Increasingly through the five years of HPSP implementation, resources allocations are expected to move (i) laterally towards reproductive health and (ii) downwards towards the community (figure 2). The NTP too will need to make similar strategic shifts to reduce TB deaths.

**Recommendations:**

1. At the time of the Annual Performance Review of HPSP, WHO should support NTP to ensure that tuberculosis is inserted in the HPSP Summary Log-Frame, together with an appropriate verifiable indicator, e.g. ‘Reduced female mortality from tuberculosis in the reproductive age group’. At the household level, an appropriate indicator and its monitoring system can be developed with support of the CIET survey.

2. The Line Director, Human Resources, MOHFW, should draw on NTP expertise and personnel for preparing the ESP training curricula and all training for service delivery and supervision to ensure appropriate emphasis on TB within the ESP.

3. For each annual plan under HPSP, WHO should very actively assist the NTP to draw on additional HPSP resources, e.g., from the reproductive and child health budgets, because TB is a major determinant of reproductive health for both men and women (See Figure 5).

Figure 5: *From Vertical Funding to Funding within ESP*

**ESP Cost & ESP Delivery in 1998-1999 (PIP, JPSP, MOHFW 1998)**

Funding within HPSP (Figure 5) leaves NTP with both opportunities and limitations. The limitations should challenge the programme to break out of a potential resource cul-de-sac for example, the NTP is fighting budget trimming due to the inclusion of...
tuberculosis within “Communicable Disease Control”. Rather NTP, with WHO support, should be proactively forming strategic partnerships to share resources with other Programme Managers, e.g. Reproductive Health and Child Health under the Line Director for the Essential Services Package.

Strategy 3
Paradigm shift for NTP beyond the health sector. The 1974 famine deaths mobilized massive development efforts to put famine in the past within the next quarter century. Similarly, the much larger annual TB deaths should spearhead intersectoral approaches to put TB in the past within the next quarter century.

Background:
- Despite the alarming 70,000 TB deaths annually and its expected escalation from the imminent HIV epidemic and MDRTB, community mobilization and behaviour change communication for TB ranks below low mortality communicable diseases such as leprosy and polio\(^5\).
- NTP’s approach to TB control, particularly among some partner NGOs, focusses on chemotherapy treatment of sputum-positive cases only, to limit further infections, but global history suggests that this approach alone is not a sustainable option to eliminate TB in high burden countries with endemic poverty and malnutrition.
- Statistics related to TB such as: 60,000 annual deaths; 300,000 new cases each year; 60 million infected with TB\(^{26,141}\); remain ‘estimates’ only, based (i) on the national tuberculin surveys of 1964-66 and 1987-88; (ii) the limited NTP monitoring system, and (iii) some case studies.

Issues:
- The alarming annual TB death toll of over 70,000, over twice the official famine death toll in 1974\(^{113}\), does not receive the nation-wide priority that it merits for reduction.
- Substantiation of the magnitude of the TB catastrophe through a national survey, beyond the epidemiological/biological framework, could catalyze a nation-wide movement against TB.
- With the high proportion of the population estimated to be infected with TB especially in urban area and the 300,000 new active cases each year, the NTP’s present approach of detecting only 60,000 cases and focussing on treating sputum positive cases, is insufficient as a sustainable option to eliminate TB.
Recommendations:

(1) WHO should assist NTP to set up a High Level Committee on TB through inter-sectoral alliances\(^7\) (see example in Annex vii). It is desirable that this High Level Committee be chaired by the Honourable Prime Minister and its Secretariat be headed by the Chairman of the Parliamentary Steering Committee on Health\(^5\) with members drawn from the institutions of civil society, relevant ministries, NGOs, unions, media, industry, commerce, and construction firms, etc. as well as development partners and investors, all of whom have either direct or indirect roles in TB control and elimination in Bangladesh.

(2) The proposed High Level Committee on Tuberculosis should support NTP to access additional funds and carry out a nationwide survey. The nationwide survey would include not only the traditional biological parameters of TB, but would also be stratified for socio-economic parameters, gender, age, assets, housing conditions, ecological integrity and particularly occupational and mobility categories. This survey would identify the key parameters and the baseline for assessing the effectiveness of the strategy for community-based tuberculosis elimination.

(3) The Communicable Disease Control and the Health and Sustainable Development Clusters of WHO should continue to support the TB control efforts in Bangladesh. Bangladesh should be taken up as a test case, through an appropriate mix of incentive programmes for effective TB cure spearheaded by local community-based institutions with both active case-finding in families and effective cures strengthened by community health workers to ‘eliminate’ TB (See Figure 2).
References

(1) Abou-Zahr, Carla; Wardlaw, T; Stanton, Cynthia; and Hill, Kenneth. Maternal Mortality. World Health Statistics Quarterly, 49 77-87 1996.


(8) Bosman, M. Health Sector Reform and Tuberculosis Control: The Case of Zambia. KNCV. Manuscript. 1999.


(14) Carrin, G. Travel Report, Beijing Medical University, Beijing, and Anqui County, Shandong Province, China C20/370/1 CHN SDE/HD WHO Geneva.


(30) Cosivi, O.; Grange, J M; Daborn C J; Raviglione, M C; Fujikara, T.; Cousins, D; Robinson, R A; Huchzeremeyer, H F A K., de Kantor, I; and Meslin, F.X. Zoonotic Tuberculosis due to Mycobacterium bovis in Developing Countries Emerging Infectious Diseases. 4(1) 1998.


(34) Currey, Bruce Letter to Honourable Minister of Food. GoB. in English copied to LCG on Food Aid. 27 May 1999.


(40) Diwan, Vinod K; Thorson, Anna; and Winkvist, Anna. Gender and Tuberculosis, Nordic School of Public Health, Universitat Umea; SIDA and WHO. Goteborg, Sweden, 1998.


(45) Farmer, P; Bayona, J; Becerra, M; Furin, J; Henry C; Hiatt; H; Kim, J Y; Mitnick, C; Nardell, E; and Shin, S. The dilemma of MDR-TB in the global era. Int J. Tuberc. LungDis. 2(ii):869-876.


(74) Margono,F.; Mroueh, J; Garely, A; and White, D. Duerr, A. Minkoff, H L Resurgence of Active Tuberculosis among pregnant women Obst Gynecol 83 911-914 1994.


(82) MOHFW. Input-wise costing by each output and revenue source. HPSP, 1999.


(84) MOHFW. National Health Policy. MOHFW. September 1998.


(93) O'Reilly, L M and Daborn, C J The Epidemiology of Mycobacterium bovis infections in animals and man: a review. Tuber Lung Dis 76 (suppl 1) 1-46 1995.


(105) Rieder, H L Socialization patterns are key to transmission dynamics of tuberculosis(EDITORIAL) Int. J. Tuberc Lung Dis. 3:177-8 1999.


(107) Richards, Michael J. and Angus, David. Possible Sexual Transmission of genitourinary tuberculosis Correspondence p439. Infectious Disease and Urology Units, Austin and Depatriation Medical Centre. Burgundy ST, Heidelberg Melbourne, Victoria, Australia Courtesy of Dr. Peter Gondrie KNCV.


(132) Van Deun, A; Aung K J M; Chowdhury S; Saha S, Pankaj A; Ashraf A; Rigouts L; Fissette K; Portaels F; Drug Susceptibility of Mycobacterium Tuberculosis in a rural area of Bangladesh and its relevance to the national treatment regimens. International Journal of Tuberculosis Lung Disease. 3(2): 143-148 1999.


(148) Zumla, Alimuddin, Grange J M. Establishing a united front against the injustice of tuberculosis. Ms. University College London.

(149) Zwarenstein, Merrick; Schoeman, Jan H; Vundule, Caesar; Lombard Carl J, and Tatley, Mike Randomized controlled trial of self-supervised and directly observed treatment of tuberculosis. The Lancet Vol. 352 (pp. 1340 - 1343), 1998.

Annex 1

ESSENTIAL SERVICES PACKAGE - DGHS

* To be created or the existing Deputy Director, TBLeprosy post can be re-designated.

** Existing Deputy Director, EPI post can be re-designated or to be created.
Annex 2

**HPSP SUMMARY LOGFRAME**

<table>
<thead>
<tr>
<th>Narrative Summary</th>
<th>Verifiable Indicators</th>
<th>Means of Verification</th>
<th>Important Assumptions</th>
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<tbody>
<tr>
<td><strong>GOAL</strong></td>
<td>Improved health and</td>
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<td>family welfare status</td>
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<td>among the most</td>
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<td></td>
<td>vulnerable women,</td>
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<td></td>
<td>children and poor of</td>
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<td></td>
<td>Bangladesh</td>
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<td>1. MMR reduced from 4</td>
<td>1.1 Sample vital</td>
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<td></td>
<td>in 1997 by 2.6 over</td>
<td>registration system</td>
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<td>next five years</td>
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<td>2. IMR m/f reduced</td>
<td>2.1 Demographic and</td>
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<td></td>
<td>from 77 in 1977 by 55</td>
<td>Health Surveys</td>
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<td></td>
<td>over next five years</td>
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<td>3. &lt;5 M R m/f reduced</td>
<td>3.1 Health and</td>
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<td></td>
<td>from 116 to 70</td>
<td>Demographic Surveys</td>
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<td>4. Malnutrition m/f</td>
<td>4.1 Nutrition surveys</td>
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<td>reduced – wasting from</td>
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<td>10 to &lt;5</td>
<td>5.1 Disease control</td>
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<td>5. Communicable</td>
<td>evaluation surveys</td>
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<td>diseases control m/f</td>
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<td>- Diarrhoea – from 2</td>
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<td>episodes/child/yr to</td>
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<td>&lt; 1</td>
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<td></td>
<td>6. Active life</td>
<td>6.1 Disease surveillance</td>
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<td></td>
<td>expectancy m/f increased up to male 62 years</td>
<td>systems</td>
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<td></td>
<td>and female 62.5 years</td>
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<td>7. Total fertility</td>
<td>7.1 Demographic surveys</td>
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<td></td>
<td>reduced to 2.5 and age at first birth &gt;18</td>
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<td><strong>PURPOSE</strong></td>
<td>Client-centered</td>
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<td>provision and client</td>
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<td>utilization of Essential</td>
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<td>Package of Services</td>
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<td>(EPS), plus selected</td>
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<td>services</td>
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<td>1. Increased % of the</td>
<td>1.1 MIS/HIS</td>
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<td>population access one</td>
<td>1.2 Baseline and</td>
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<td>or more of the ESP</td>
<td>evaluation surveys</td>
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<td>services esp. of women,</td>
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<td></td>
<td>children and poor,</td>
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<td>which meet govt./community</td>
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<td>quality standards and</td>
<td>standards and satisfy</td>
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<td>satisfy clients* needs</td>
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<td>2. Cost of delivery</td>
<td>2.1 Annual public</td>
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<td>services decreased/user</td>
<td>expenditure reviews</td>
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<td>over next five years</td>
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<td>3. New ESP usage rate</td>
<td>3.1 MIS/HIS</td>
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<td></td>
<td>exceeds old usage rate</td>
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<td>within first year of</td>
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<td></td>
<td>service delivery</td>
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<td><strong>OUTPUTS</strong></td>
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<td></td>
<td>1. Sustainable ESP</td>
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<td>defined, funded,</td>
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<td>promoted and</td>
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<td>implemented</td>
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<td>1. ESP standards for</td>
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<td></td>
<td>target groups developed and agreed</td>
<td>ESP operational plan</td>
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<td>by 9/97 and endorsed by stakeholders</td>
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<td>2. Community level delivery points reach increased percentage of population via revitalized community centers:</td>
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<td></td>
<td>99 00 01 02 03 Total</td>
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<tr>
<td></td>
<td>a. % pop. Affected</td>
<td>30 40 50 60 80 80%</td>
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<td>b. No. community clinics</td>
<td>1200 6000 1200 13500</td>
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<td></td>
<td>c. Service Providers</td>
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Annex 3

TUBERCULOSIS AND HEALTH SERVICE REFORM IN BANGLADESH
A MATERNAL DEATH OR A MOTHER’S DEATH

WHO’s Tenth Revision of the International Classification of Diseases (ICD-19) defines a maternal death as: \textit{the death of a woman while pregnant or within 42 days of termination of pregnancy}, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. A maternal death thus defined is limited to a very brief period of motherhood. Indeed, a woman may die a maternal death before becoming a mother, if she has lost a child through ectopic pregnancy, menstrual regulation, abortion, or still birth\(^1\).

The Goal of HPSP is: “Improved health and family welfare status among the most vulnerable women, children and poor of Bangladesh” The principal verifiable indicator for achieving HPSP Goal is “MMR reduced from 4 in 1997 by 2.6 over next five years”. This episodic measure, the Maternal Mortality Ratio, only considers maternal deaths during the 294 days associated with pregnancy - a limited reflection of the risks of death to mothers like Lokman’s Ma (see page 13) who may die, for example from tuberculosis, at any point during their entire span of the reproductive years \(15 - 45\) or \(10,950\) days per woman.

The World Bank has calculated globally that tuberculosis kills more women annually than all causes of maternal mortality combined. WHO has calculated globally that tuberculosis is the leading individual cause of death among females aged 15-44 (40, page 37). In Bangladesh, according to WHO estimates, there are 33,000 maternal deaths each year (I) of which many may be due to tuberculosis. The United Nations estimate is almost double that figure, about 63,000 women in Bangladesh dying each year during their reproductive years\(^1\). The majority of women who die during their reproductive years in Bangladesh, e.g. because of tuberculosis, are likely to be mothers, unless they are infertile, perhaps from tuberculosis\(^9,77\). Yet, because of the selective nature of MMR as an indicator, the deaths of these additional 30,000\(^1\) mothers every year, a total of 150,000 over five years, are excluded when monitoring the impact of HPSP.

Strengthening the HPSP monitoring systems should support ensuring accountability for all deaths of mothers.

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\(^1\) In Bangladesh the reproductive age may begin at 13 years.

\(^2\) For neonates, or for children under one month old, the death of a mother, traditionally the major health care providing institution, means that 70% of those neonates will die during the next 24 months (125)
Annex 4

LIST OF PERSONS MET

(2) Adnan, Professor Shapan. Chairman, The Shomabesh Institute, Dhaka.
(4) Alam, Dr Nurul, Director, Field Programme, RDRS.
(5) Alam, Dr Md Shamsul, Public Health Expert, Thana Functional Improvement Pilot Project.
(6) Aldis, Dr William L Medical Officer, CDD/ARI, WHO Dhaka.
(7) Ali, Dr Ashraf Bangladesh College of General Practitioners, Dhaka.
(8) Ali, Mr Muhammud, Head, Management Change Unit.
(9) Ali, Dr Md Sohrab, Civil Surgeon, Sylhet District, Sylhet.
(10) Allison, Mr Chris, Team Leader, FPHP Final Evaluation Team.
(12) Begum, Dr Sharifa, WHO Collaborating Centre, BIDS.
(13) Biswas, Dr Kakon. Dhaka Medical College Hospital.
(14) Borgdoff, Dr Martien. Epidemiologist, KNCV-WHO.
(15) Buve, Dr Anne, Department of Microbiology, University of Antwerp, Belgium.
(16) Carrin, Dr Guido, Senior Health Economist, HSD, WHO/HQ, Geneva.
(17) Chowdhury, Dr Ataur Rahman, Deputy Secretary i/c Health Division, Bangladesh Red Crescent Society.
(18) Chenier, Ms Kristen, Associate Programme Officer, UNHCR.
(19) Currey, Dr Mehtabunisa, Senior Health Advisor, DFID Bangladesh, Dhaka.
(20) Chakma, Dr Prasanjit, Public Health Expert, Upazila Functional Improvement Pilot Project.
(21) Chowdhury, Dr Zafrullah, Coordinator, Gonoshasthaya Kendra.
(22) Claquin, Dr Pierre, ADB Consultant to UPHC/TA Project.
(24) De Colombani, Dr Pierpaolo, Medical Officer (TB), WHO/Bangladesh.
(25) Dey, Subrata Kumar, Technical Officer (PM + FO), BATCHA Project, CARE.
(27) Dawla, A B M Shameem Ud, Programme Development Officer (Research), CARE.
(28) Dubbledam, Dr Rene, ETC Crystal, FPHP Review Team.
(29) Gilbert, Mr Antoine, Health Section, EC Delegation.
(30) Gondrie, Dr Peter. Coordinator, International Programme Support, KNCV.
(31) Gove, Dr Sandy Consultant to WHO IMCI and Reproductive Health.
(32) Grant, Mr Ken, Executive Director, IHSD.
(35) Hassanein, Mr Mahmoud, Director, ILO.
(36) Herbert, Mr Brad, Head of Social Sectors, The World Bank.
(37) Haque, Shahidul, Executive Director, SARPV.
(38) Hoque, Dr Md Atiquil, Deputy Programme Manager, TB Directorate General of Health Services.
(39) Hossain, Dr Jahangir. Project Coordinator, Safe Mother Project. CARE Bangladesh.
(40) Hossain, Dr Zakir, Health Directorate, Ministry of Health and Family Welfare.
(41) Hye, Mr Humayan (Retired), Consultant, The World Bank.
(42) Hyder, Dr Md. Khurshid Alam, Tuberculosis and Chest Disease Specialist, National Training Coordinator (WHO).
(43) Hartmann, Dr Paolo, Scientist, Strategic Support to Countries in Greatest Need, World Health Organization.
(44) Hoque, Dr Shamsul, Director, Primary Care and Disease Control, Line Director ESP, MOHFW.
(45) Ishijima, Tadayuki, Coordinator of JOCV, Japan Overseas Cooperation Volunteers.
(46) Islam, Shafiqul Director General Local Government Division.
(47) Islam, Sirajul Deputy Chief Local Government Division.
(48) Jenkins, Dr Carole, Head, Health Programme, CARE, Bangladesh, Dhaka.
(49) Kabir, Dr Ahsan, MBBS, MCPS (Surgery) PGT Urology, Genitourinary Surgeon, Park View Nursing Home.
(50) Kabir, Khushi, Coordinator, Nijera Kori.
(51) Karim, Mr Enamul, Consultant, IHSD, Management Change Unit.
(52) Kawnine, Mr Nazmul, Health Economics Unit (HEU), MOHFW.
(53) Keus, Kees, Medical Coordinator, Medecins Sans Frontières.
(54) Khan, Dr Naila, Professor of Child Development and Neurology, Dhaka Shishu Hospital.
(55) Khan, A N M A Salim, Director, Training & Project Director, Gender Training Project, NIPORT.
(56) Killingsworth, Professor James, Health Economics Unit (HEU), MOHFW.
(57) Komba-Kono, Dr. George J., Medical Officer, Support of Primary Health Care Development, NIPSOM, Dhaka.
(58) Kroon, Dr. Marjan, First Secretary, Royal Netherlands Embassy, Dhaka.
(59) Kumaresan, Dr. Jacob, Tuberculosis, WHO/HQ, Geneva.
(60) Leijon, Claes, Counsellor (Cooperation), Delegation of the European Commission.
(61) Liljestrand, Dr. Jerker, Department of Reproductive Health and Research, WHO.
(62) Lobo, Dr. Derek, Medical Officer (leprosy), WHO/Bangladesh.
(63) Lutfunessa, Dr. Bangladesh College of General Practitioners, Dhaka.
(64) McCall, Dr. Maureen, Reproductive Public Health Consultant, FPHP Evaluation Team.
(65) Maheswari, Mr. P., Retired Malarialogist, MOHFW.
(66) Mairesse, Dr. Gabriel, M.D., DTMH, Public Health Specialist, Upazila Functional Improvement Pilot Project.
(67) Mathai, Dr. Rabia, Regional Health Advisor, South Asia, International Federation of Red Cross and Red Crescent Societies, South Asia Regional Delegation.
(68) Meacham, Dr. Tony, Public Health Specialist, South Asia Region, World Bank.
(71) Normand BA, Professor of Health Policy, Head of Department, Public Health & Policy, London School of Hygiene & Tropical Medicine (University of London).
(72) Piechulek, Dr. Helga, GTZ, Bogra Project.
(73) Quamruzzaman, Professor Quazi, Chairman, Dhaka Community Hospital.
(74) Quazi, Ms. Alison, Information Systems, Dhaka Community Hospital.
(75) Rombaut, Bart, Country Director, Damien Foundation.
(76) Rahman, Mr. Badiul, Secretary LGRD, Government of Bangladesh.
(77) Rahman, Professor Mahmudur, Coordinator, Dhaka Community Hospital.
(78) Rahman, Dr. Salima, Community Health Coordinator, RDRS.
(79) Reza, Mr. M., Secretary MOHFW.
(80) Rasmussen, Mr. Klasse, Health Section, Royal Swedish Embassy.
(81) Rohde, Ms. Gretchen, FPHP Evaluation Team.
(82) Richardus, Dr. J.H., Public Health Epidemiologist, Department of Public Health, Faculty of Medicine, Erasmus University, Rotterdam.
(83) Rasheed, Mr. Mohamed, Programme & Administrative Officer, WHO/Bangladesh.
(84) Salim, Dr Md Abdul Hamid, Medical Adviser, Damien Foundation.
(85) Sen, Dr Binnayek, WHO Collaborating Centre, Bangladesh Institute of Development Studies.
(86) Scholer, Ms Helle Lohmann, Associate Expert on Women Workers and Gender Questions, International Labour Organisation.
(87) Snider, Dr David. Medical Officer, EPI, WHO, Dhaka
(88) Teas, Ms Martha. Monitoring and Evaluation, WFP, Dhaka
(89) Tweed, Mr Hugh. Vice Chairman, Foreign Investor’s Chamber of Commerce and Industry.
(90) Meachem, Dr Tony, Public Health Physician, World Bank, Dhaka.
(91) Ustun, Dr Berhan. International Classification of Diseases. WHO
(92) Wares, Dr D Fraser, TB Programme Coordinator, Britain Nepal Medical Trust.
(93) Wahra, Md Gawher Nayeem, Manager, Disaster Preparedness and Management Programme. Disaster Forum.
(94) Whittlesey, David. Field Director, International Office of Migration, Dhaka
(95) Yousuf, Dr Kazi Abu, Member of Parliament, Standing Committee on Ministry of Health & Family Welfare, Bangladesh Parliament.