Tuberculosis in Bangladesh: A 40 year review

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Objectives

To review the epidemiology of TB in Bangladesh during 1966-2006

- Incidence
- Prevalence
- Case detection
- Treatment success
- Care seeking
- Drug resistance
- Mortality
Methods

Review journal articles, documents, reports, data series and records for the period 1966-2006
Background

Millennium Development Goals (MDG) 6, Target 8: “halt and begin to reverse the incidence of TB by 2015”

Case Detection 70%
Treatment Success 85%

Target

Reduce prevalence and deaths 50%

WHO/HTM/TB/2006,362
Tuberculosis in Bangladesh

- Ranks 5th globally
- Incidence all cases 227/100K/Yr
- Incidence SS+ve cases 102/100K/Yr
- 300,000 new cases in a year
- 70,000 deaths/year

WHO South-East Asia Region (SEAR)
Rank based on estimated number of incident cases (all forms) in 2004.

WHO/HTM/TB/2006.362
## Prevalence of sputum positive TB estimates in different surveys

<table>
<thead>
<tr>
<th>Organization</th>
<th>Period</th>
<th>Prevalence estimates/100K</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGHS&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1964-66</td>
<td>318</td>
</tr>
<tr>
<td>DGHS&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1987-88</td>
<td>870</td>
</tr>
<tr>
<td>BRAC&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1995</td>
<td>70-150</td>
</tr>
<tr>
<td>Damien Foundation&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2001</td>
<td>24&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>ICDDR,B&lt;sup&gt;5&lt;/sup&gt;</td>
<td>2001</td>
<td>95&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

* Population ≥ 12 years (All others ≥ 15 years)
** Cases under treatment not having cough ≥ 3 weeks not enrolled

- Differences in methods
- Differences in population
- Different tests done
- Sampling variation

Population prevalence of smear positive TB cases by age and gender (Matlab 2001-2002)

*** p<0.0001 Zaman et al, 2006
National Tuberculosis Control Program, Bangladesh
Case Detection Rate: 1993-2005

NTP/DGHS, Annual Report 2005
TB Surveillance in Rural Matlab

- Routine surveillance in the intervention area
- Referral of all suspected cases to Matlab THC
- Specific data collection from all areas
Distribution of TB cases in rural Matlab 2001

- Geographic clusters of increased risk of TB

<table>
<thead>
<tr>
<th>Study Organization</th>
<th>Year of study</th>
<th>Female/Male ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAC$^1$</td>
<td>1992-94</td>
<td>0.39</td>
</tr>
<tr>
<td>NTP$^2$</td>
<td>1997</td>
<td>0.35</td>
</tr>
<tr>
<td>Damien Foundation$^3$</td>
<td>2001</td>
<td>0.33</td>
</tr>
<tr>
<td>ICDDR,B$^4$</td>
<td>2001</td>
<td>0.24</td>
</tr>
</tbody>
</table>

- Differentials in exposure
- Differentials in accessibility
- Smoking
- Cough production
- Progression of disease

National Tuberculosis Control Program, Bangladesh
Treatment Success Rate: 1993-2004

Year


Treatment success rate

0 10 20 30 40 50 60 70 80 90 100

80.6 72.7 72.4 75.3 78.5 80.1 81 81.3 84 84 85 89

NTP/DGHS, Annual Report 2005

icddr,b
KNOWLEDGE FOR GLOBAL LIFESAVING SOLUTIONS
Detection graph

About 25 countries met both targets by 2005

Stop TB partnership: The MDG goal Report 2006
## Drug resistance pattern of M. Tuberculosis in Bangladesh

<table>
<thead>
<tr>
<th>Study Organization</th>
<th>Resistance to any drug %</th>
<th>Multiple drug resistance (MDR) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSMMU(^1)</td>
<td>29.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Damien Foundation(^2)</td>
<td>18.6</td>
<td>2.0</td>
</tr>
<tr>
<td>ICDDR,B(^3)</td>
<td>48.4</td>
<td>5.5</td>
</tr>
</tbody>
</table>

- More MDR among those who received irregular treatment > 1 m (15.4% vs 3.0%)

Care seeking of suspected TB cases

Adults with Chronic Cough (1046)

Sought care 648 (62%)

DOTS (Public + NGO)
106 (16.3%)

NON - DOTS (Private Sector)
542 (83.7%)

## TB deaths in rural Matlab 1988-2003

<table>
<thead>
<tr>
<th>Age group</th>
<th>Deaths</th>
<th>Age standardized mortality Rate / 100K</th>
</tr>
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<tbody>
<tr>
<td>≥ 15 yrs</td>
<td>3.6 % of all deaths</td>
<td>Male: 19.15 ~ 46.05</td>
</tr>
<tr>
<td>&lt; 15 yrs</td>
<td>2.8 % of TB deaths</td>
<td>Female: 2.19 ~ 23.72</td>
</tr>
<tr>
<td>15-44 yrs</td>
<td>21.6 %</td>
<td></td>
</tr>
<tr>
<td>≥ 45 yrs</td>
<td>75.6 %</td>
<td></td>
</tr>
</tbody>
</table>

Ascertained through verbal autopsy

Future challenges

- Scarcity of epidemiological data
- Involvement of private sectors
- Strategies to increase case detection
- Continuation of MDR surveillance
- Diagnosis and management of childhood TB/extra-pulmonary
- Development of rapid diagnostic methods
- Extension of DOTS to work place, hard reach areas
Collaboration

- Government of Bangladesh (NTP)
- Matlab THC
- BRAC
- WHO
- All partners of NTP