National Tuberculosis Prevalence Survey, Bangladesh 2007-2009
Tuberculosis in Bangladesh

Ranks 6th globally

Incidence all cases : 225/100,000/Yr
Notifications : 99/100,000/Yr
(new and relapse)
Prevalence all cases : 426/100,000
Mortality rate : 51/100,000

WHO/HTM/TB/2010
Objectives

To determine the prevalence of new smear-positive TB in Bangladesh
Survey at a Glance

• Multi-stage Cluster survey
  – 40 clusters of 1250 participants each
    (≥15 years)
  • Total 50,000 active participants
  – 20 Rural and 20 Urban clusters
Field activities

- Pre-survey visit
- Census taking
- Sputum collection
- Microscopy
- Interviews
- TST survey
- Quality assurance
Survey FM 2 Samples
Confirm ZN Same Samples
ZN New Sample
Chest X-Ray
Case Definition

2 Positive

2 Pos

1 Pos

0 Pos

2 Positive

2 Pos

1 Pos

0 Pos

Pos

Neg

Suggestive

Not-Suggestive

Suggestive

Not-Suggestive

Neg

Pos

Case

Case

Case

Case

No Case

No Case

No Case

No Case
Diagnostic algorithm

Survey FM 2 Samples

Confirm ZN Same Samples

ZN New Sample

Chest X-Ray

Case Definition

1 Positive

Pos

Pos

Suggestive
Case

Neg

Suggestive
Case

Not-Suggestive
No Case

Neg

Neg

Not-Suggestive
No Case

0 Positive

Pos

Suggestive
Case

Neg

Not-Suggestive
No Case

No Case

icddr,b

KNOWLEDGE FOR GLOBAL LIFESAVING SOLUTIONS
ORIENTATION MEETING ON
NATIONAL TUBERCULOSIS PREVALENCE SURVEY
BANGLADESH ICDDR,B
VENUE: ALAM FI POURA PRIMARY SCHOOL
## TB cases by sex and residence

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Census population N (%)</th>
<th>Eligible population N (%)</th>
<th>Participated N (%)</th>
<th>TB cases detected in the survey N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47,785</td>
<td>31,158 (65)</td>
<td>24,203 (77)</td>
<td>24 (73)</td>
</tr>
<tr>
<td>Female</td>
<td>49,131</td>
<td>32,557 (66)</td>
<td>27,895 (86)</td>
<td>9 (27)</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>50,047</td>
<td>31,445 (63)</td>
<td>26,052 (83)</td>
<td>20 (61)</td>
</tr>
<tr>
<td>Urban</td>
<td>46,869</td>
<td>32,270 (69)</td>
<td>26,046 (81)</td>
<td>13 (40)</td>
</tr>
</tbody>
</table>
## Prevalence of TB cases

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of TB cases detected</th>
<th>Prevalence in 100,000</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Crude prevalence (95% CI)</td>
<td>Adjusted prevalence (95% CI)</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>33</td>
<td>63.3 (43.6-88.9)</td>
<td>79.4 (47.1-133.8)</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>20</td>
<td>76.8 (46.9-118.6)</td>
<td>86.0 (47.9-154.3)</td>
</tr>
<tr>
<td>Urban</td>
<td>13</td>
<td>49.9 (26.6-85.3)</td>
<td>51.1 (27.7-94.4)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>99.2 (63.5-147.8)</td>
<td>121.7 (69.6-212.8)</td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
<td>32.3 (14.8-61.3)</td>
<td>40.3 (13.4-121.4)</td>
</tr>
</tbody>
</table>
## Prevalence of TB cases

<table>
<thead>
<tr>
<th>Characteristics</th>
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<th>Prevalence in 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Crude prevalence</td>
</tr>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-24</td>
<td>5</td>
<td>32.7</td>
</tr>
<tr>
<td>25-34</td>
<td>3</td>
<td>24.1</td>
</tr>
<tr>
<td>35-44</td>
<td>6</td>
<td>58.9</td>
</tr>
<tr>
<td>45-54</td>
<td>6</td>
<td>36.0</td>
</tr>
<tr>
<td>55+</td>
<td>13</td>
<td>176.2</td>
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<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>15</td>
<td>121.6</td>
</tr>
<tr>
<td>Primary</td>
<td>8</td>
<td>68.6</td>
</tr>
<tr>
<td>Secondary</td>
<td>6</td>
<td>35.0</td>
</tr>
<tr>
<td>Secondary+</td>
<td>4</td>
<td>36.5</td>
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</tbody>
</table>
### TB cases by income, expenditure and asset quintiles

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of TB cases detected</th>
<th>Prevalence in 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Crude prevalence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly income (Tk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 3000</td>
<td>7</td>
<td>118.6</td>
</tr>
<tr>
<td>3001-10000</td>
<td>22</td>
<td>68.3</td>
</tr>
<tr>
<td>10000+</td>
<td>4</td>
<td>28.6</td>
</tr>
<tr>
<td>Monthly expenditure (Tk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 3000</td>
<td>11</td>
<td>140.7</td>
</tr>
<tr>
<td>3001-10000</td>
<td>18</td>
<td>55.9</td>
</tr>
<tr>
<td>10000+</td>
<td>4</td>
<td>29.2</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Number of TB cases detected</td>
<td>Prevalence in 100,000</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crude prevalence</td>
</tr>
<tr>
<td>Asset quintiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; (Lowest)</td>
<td>12</td>
<td>134.5</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>8</td>
<td>81.9</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>7</td>
<td>66.2</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>4</td>
<td>35.2</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; (Highest)</td>
<td>2</td>
<td>17.6</td>
</tr>
</tbody>
</table>
Challenges

Absence of regular water and electricity supply

Difficulties in maintaining cold chain

Difficult transportation

Difficult to access

Sometime difficult to define household

Absence of male members in urban areas

Resistance by parents, religious leaders
Acknowledgements

Implementing Partners

NTP
BRAC
Damien Foundation
ICDDR,B
ALL PARTNERS

Technical assistance

WHO
KNCV

Funded by

GOB
USAID
GFATM
Lessons learned

- Successfully conducted nationwide prevalence survey after 20 years
- First survey after introduction of DOTS
- Effective Collaboration between different partners, GO NGOs
- Excellent Community participation
- Overcome difficult logistical problems
  - Difficult transportation
  - Staying in remote areas
- Successful interview and sample collection from urban area
Lessons learned

- Staff retention
- Setting up field level laboratory in rural, remote areas
- FM first time in a rural setting
- Provided a cost estimation of conducting such nationwide survey
- Technical support KNCV, WHO
Impact of the survey

- Provide input to NTP and WHO to estimate country TB burden
- Highlighted to Intensify TB control activities among older people and rural population
- Contributed to develop capacity building in conducting country wide survey
- Similar survey can be conducted at regular intervals
- Experiences from Bangladesh are being used in other developing countries conducting prevalence surveys
## PPD skin testing results

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>0 mm (%)</th>
<th>1-10 mm (%)</th>
<th>11-14 mm (%)</th>
<th>15 + mm (%)</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-9</td>
<td>7,168 (77)</td>
<td>1,548 (17)</td>
<td>379 (4)</td>
<td>262 (3)</td>
<td>9,357</td>
</tr>
<tr>
<td>10-14</td>
<td>5,189 (63)</td>
<td>1,973 (24)</td>
<td>621 (8)</td>
<td>445 (5)</td>
<td>8,228</td>
</tr>
<tr>
<td>All</td>
<td>12,357 (70)</td>
<td>3,521 (20)</td>
<td>1,000 (6)</td>
<td>707 (4)</td>
<td>17,585</td>
</tr>
</tbody>
</table>