Overview of this presentation

- Global burden of childhood TB and challenges with country implementation
- Basic facts about Childhood TB
- WHO and Partners' response
  - Global Guidelines and country level support
  - Advocacy efforts and Childhood TB Roadmap
- Conclusions

The Global Burden of TB (2011)

<table>
<thead>
<tr>
<th>All forms of TB</th>
<th>Estimated number of cases</th>
<th>Estimated number of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.7 million (8.3–9.0 million)</td>
<td>1.4 million* (1.3–1.6 million)</td>
</tr>
<tr>
<td>Childhood TB</td>
<td><strong>490,000</strong> (470,000–510,000)</td>
<td><strong>64,000</strong>** ** (58,000 – 71,000)</td>
</tr>
</tbody>
</table>

Source: WHO Global Tuberculosis Report 2012
* Including deaths attributed to HIV/TB
** Excluding deaths attributed to TB/HIV
### WHO and Union survey

**Data from 9 countries, 2010**

<table>
<thead>
<tr>
<th>Country</th>
<th>TB notification (in 100,000)</th>
<th>New TB cases reported to WHO</th>
<th>New TB cases reported in survey</th>
<th>Child TB of all cases notified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>28,238</td>
<td>642</td>
<td>2,946</td>
<td>10.4% (2.3%)</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>158,252</td>
<td>4,235</td>
<td>4,235</td>
<td>2.7% (2.7%)</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>156,928</td>
<td>3,190</td>
<td>17,566</td>
<td>11.2% (2%)</td>
</tr>
<tr>
<td>India</td>
<td>1,522,147</td>
<td>13,415</td>
<td>85,756</td>
<td>5.6% (0.8%)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>302,861</td>
<td>28,312</td>
<td>28,312</td>
<td>9.3% (9.3%)</td>
</tr>
<tr>
<td>Myanmar</td>
<td>137,403</td>
<td>302</td>
<td>32,471</td>
<td>26.3% (0.2%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>269,290</td>
<td>24,474</td>
<td>24,474</td>
<td>9.1% (0.1%)</td>
</tr>
<tr>
<td>Uganda</td>
<td>45,546</td>
<td>669</td>
<td>662</td>
<td>1.5% (1.5%)</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>47,557</td>
<td>4371</td>
<td>4383</td>
<td>9.2% (9.2%)</td>
</tr>
</tbody>
</table>


### RESEARCH ARTICLE

**High caseload of childhood tuberculosis in hospitals on Java Island, Indonesia: a cross sectional study**

Trisas Lestari1, Ari Pribadi1, Anna-Karin Hurtig2 and Adi Utamin1

**Only 1.6% of 4,821 cases in children were reported to NTP**


### Burden of child TB in Java 2005

<table>
<thead>
<tr>
<th>TB cases</th>
<th>Inpatient</th>
<th>Outpatient</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total TB cases</td>
<td>5,877</td>
<td>15,694</td>
<td>21,571</td>
</tr>
<tr>
<td>Child TB cases</td>
<td>648</td>
<td>4,173</td>
<td>4,821</td>
</tr>
<tr>
<td>% of total burden</td>
<td>11%</td>
<td>27%</td>
<td>22%</td>
</tr>
<tr>
<td>&lt; 5 years</td>
<td>56%</td>
<td>53%</td>
<td>53%</td>
</tr>
<tr>
<td>Smear positive disease</td>
<td>16%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>EPTB</td>
<td>15%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Non-teaching hospital</td>
<td>73%</td>
<td>76%</td>
<td>75%</td>
</tr>
<tr>
<td>Private health facility</td>
<td>8%</td>
<td>7%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Why children with TB are not reported?

- Difficulty in confirming a case of childhood TB - lack of accurate, reliable diagnostic tools;
- Focus on smear-positive cases (mostly adults);
  - Misperception of childhood TB as a low public health priority;
  - Misperception that childhood TB would disappear simply by containing TB in adults;
  - Use of "old" reporting formats (age/sex disaggregation for SS+ only)
- Hospitals and private providers not linked;
- Lack of recognition of childhood TB importance within existing child health programs;
- Lack of advocacy on behalf of children with TB;

Basic facts - TB in Children

- Source of infection usually a close family contact
- Children who are infected are more likely to progress from infection to TB disease than adults:
  - 43% TB in children < 1 year and 25% in children aged one to five years
  - 15% in adolescents
  - 10% in adults
- Most clinical TB in children is pulmonary but children with TB are generally NOT infectious (paucibacillary disease)
- Instead, they may get the more severe extrapulmonary forms of TB: meningitis, miliary (disseminated TB), bone or kidney disease

Can TB in children be prevented?

- BCG is an important strategy for young children
  - given at birth with very high coverage in most of the world
  - protects partially against severe TB disease
  - but does not protect against infection!!!!
- Diagnosis and treatment of adult contacts is also important
- Contact investigation of adult smear positive cases and IPT to children who are infected but do not yet have disease
Percent of all cases yielded by active case finding among contacts of TB cases – Morocco, 1993-2004

How can TB in children be diagnosed?

- **Typical symptoms:**
  - Persistent cough; weight loss or failure to gain weight; fever and/or night sweat; fatigue, reduced playfulness, less active

- **History of contact with active TB case**
  - Household; frequent contact (neighbour, relative); school in older children; timing of contact (1 year)

- **Clinical examination and tests:**
  - weight, vital signs, respiratory system
  - chest X-ray, TST, HIV test, sputum test (induced sputum or gastric aspirates), Xpert MTB/Rif
  - Investigations such as TST and sputum culture are often not available
Treatment of TB in children

Drug dosing higher than adults:
- Isoniazid (H) – 10 mg/kg (range 7–15 mg/kg)
  - maximum dose 300 mg/day
- Rifampicin (R) – 15 mg/kg (range 10–20 mg/kg)
  - maximum dose 600 mg/day
- Pyrazinamide (Z) – 35 mg/kg (30–40 mg/kg)
- Ethambutol (E) – 20 mg/kg (15–25 mg/kg)

Treatment is effective, but outcomes poorer than in adults (or not measured at all)
- Difficult to make the correct diagnosis in a timely way;
- Many children have severe forms of the disease (e.g. meningitis)
- Children often do not get the same careful directly observed treatment that ensures adults finish their treatment
- Treatment outcome of children often not reported (unknown)

Provision of TB drugs childhood formulations through GDF

- Global Drug Facility (GDF) provided drugs to 60 countries, in Africa, Central, South and South-East Asia and in the Middle-East and the Caucasus
- Quality-assured fixed-dose paediatric formulations for treatment of active disease and preventive chemotherapy for almost 400,000 children.
Several international guidelines

- WHO Guidance for NTPs – 2006 and Rapid Advice on Treatment in 2010
- WHO TB/HIV guidance on ICF and IPT - 2010
- Union’s Guidance on TB/HIV – 2009 and Desk Guide in 2010

Country level activities

Technical assistance provided to countries on national guidelines:
- Bangladesh, Botswana, Cambodia, DPRK, Djibouti, Ethiopia, Indonesia, Iraq, Kenya, Mexico, Mozambique, Nepal, Pakistan, Philippines, PNG, Rwanda, Sudan (N), Tanzania, Uganda, Vietnam, and Zimbabwe.

Participation of Childhood TB experts in National TB Programme Reviews
- Ghana (March 2013), Nigeria (April 2013), Philippines (Sep 2013), Thailand (Aug 2013)

Recent activities of WHO Regional and Country offices:
- EURO/Copenhagen established an European Task Force on Childhood TB;
- EMRO/Cairo plans a regional training in Egypt and a national training in Iraq;
- AFRO/Brazzaville developing a framework for pediatric TB working closely with partners to encourage national scale up of childhood TB activities;
- WPRO/Manila invited a pediatrician to the regional Technical Advisory Group (TAG) and planning a regional training workshop

Global momentum on Childhood TB

- World TB Day 2012 devoted to childhood TB
- First estimates published in TB Report 2012
- Closing the gap between policy and practice is an identified priority
- WHO/UNICEF/CDC/Union/TAG Childhood TB Roadmap and advocacy to engage other programmes and care providers

Closing the Policy-Practice Gap in the Management of Child Contacts of Tuberculosis Cases in Developing Countries
Conclusions

• More work needed on refining childhood TB burden estimates

• Capitalize on advocacy efforts and global momentum to close the policy-practice gap through
  – Scaling up training and TA to countries
  – Engaging with MCH, HIV/AIDS and child health services

Acknowledgements

• Steve Graham and the core team of the Childhood TB subgroup

• Mario Raviglione, Babis Sismanidis and Annemieke Brands,
  – Stop TB Department/WHO HQ

Thank you!