Indonesia TB Inventory Study

Bali, 26 September 2014
General information

• Population 252,164,800 (national statistic bureau estimates)
• 34 provinces
• 414 districts, 92 cities, 5 administrative cities, and 1 administrative district
TB under notification

• TB notification 2013
  – 195,000 smear positive
  – 330,000 all forms

• Estimated incidence 2013
  – 248,000 smear positive
  – 460,000 all forms

• From prevalence survey: among those admitted under TB treatment during interview, < 30% found in national register
Private sectors

• Around 900 private hospitals
• Around 90,000 private practitioners
  – 5,000 new doctors graduated per year
  – 3,080 private practitioners are engaged in NTP
  – 9,000 family doctors will be engaged by national health insurance
  – Specialists: pediatricians, internists
• Private clinics
• Non NTP laboratories
• Work place
• NGO
Public non-NTP

- Public hospital
- Military hospital
- Prison clinic
- Public, non MoH, health providers
- University hospital
- Non NTP public laboratories
- Departments inside an NTP health provider who do not report TB cases (ex. Departments/ clinic other than DOTS clinic)
Mapping

• Registered private practitioners and clinics list could be found in district health office
• Unregistered providers exist
• NTP is setting health facility mapping but the list is not complete yet
Health facilities to include

Registered facilities

• Private
• Public
• Departments in NTP facilities which do not report the cases to NTP
Databases of TB cases

• National register for notified cases to NTP (SITT)
  – Phase 1 (no national ID number)
  – Phase 2 (starts from 2014, covers all provinces)

• District TB registers

• Health provider’s registers
Objective

• To quantify the level of under-reporting of diagnosed TB cases to national surveillance system
Population, 2013

Sumatera (20%)

Java-Bali (60%)

Others (20%)

Notified new smear pos, 2013
Stratification

• Different TB prevalence in 3 different regions (TB prevalence survey 2004 & 2014 (prelim.))

Region 1
• Sumatera

Region 2
• Java
• Bali

Region 3
• Nusa Tenggara
  • Kalimantan
    • Sulawesi
    • Maluku
    • Papua
## Prior guess of under-reporting

<table>
<thead>
<tr>
<th></th>
<th>Notified cases, 2013</th>
<th>Incident cases, 2013*</th>
<th>Under-reporting estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smear positive case</td>
<td>195,000</td>
<td>248,000</td>
<td>21%</td>
</tr>
<tr>
<td>All forms</td>
<td>330,000</td>
<td>460,000</td>
<td>28%</td>
</tr>
</tbody>
</table>

* WHO Global Report
## Sample size of cases

<table>
<thead>
<tr>
<th>Under-reporting (p)</th>
<th>Relative precision (d)</th>
<th>Design effect (DEFF)</th>
<th>Final sample size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>0.15</td>
<td>4.96</td>
<td>3,387</td>
</tr>
<tr>
<td>0.20</td>
<td>0.20</td>
<td>4.96</td>
<td>1,905</td>
</tr>
<tr>
<td>0.20</td>
<td>0.25</td>
<td>4.96</td>
<td>1,219</td>
</tr>
<tr>
<td>0.30</td>
<td>0.15</td>
<td>7.79</td>
<td>3,103</td>
</tr>
<tr>
<td>0.30</td>
<td>0.20</td>
<td>7.79</td>
<td>1,745</td>
</tr>
<tr>
<td>0.30</td>
<td>0.25</td>
<td>7.79</td>
<td>1,117</td>
</tr>
</tbody>
</table>

- Harmonic mean of cluster size (m) = 45
  - (3 months all forms notification adjusted by CDR of 0.72)
- Coefficient of between-cluster variation (k) = 0.6
Sample size of cluster

- Sample size of size = 3,500
- Median value of number of patients expected to be diagnosed per cluster = 118 (estimated from 3 months notified all form cases adjusted by CDR of 0.72)
- Sample size of cluster = 3,500/118 = 30
- District (BMU) as cluster
## Sample allocation

<table>
<thead>
<tr>
<th>Region</th>
<th>Pop. mean</th>
<th>Pop. SD</th>
<th>Proportional to N</th>
<th>Proportional to pop.</th>
<th>Neyman allocation</th>
<th>Equal allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumatera</td>
<td>353,558</td>
<td>321,848</td>
<td>9</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Jawa-Bali</td>
<td>1,146,858</td>
<td>794,813</td>
<td>8</td>
<td>18</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Lainnya</td>
<td>225,501</td>
<td>182,265</td>
<td>13</td>
<td>6</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>499,845</td>
<td>594,426</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>
Study design

• Probability proportional to population sampling of district followed by prospective collection of data for cases diagnosed by ALL health-care providers within selected districts for 3 months

• Followed by record-linkage with an electronic case-based NTP database
District selection

- Districts were sorted by city/district classification (urban/rural) and provincial code in each region
- Systematically sampled for each region
- Implicit stratification on urban/rural and province
Selected districts/cities

Region 1 (Sumatera)
Pidie, Aceh
Deli Serdang, Sumut
Tanah Datar, Sumbar
Rokan Hilir, Riau
Musi Banyuasin, Sumsel
Lampung Timur, Lampung
Sibolga (City), Sumut
Palembang (City), Sumsel

Region 2 (Java-Bali)
Cianjur, Jabar
Ciamis, Jabar
Subang, Jabar
Cilacap, Jateng
Boyolali, Jateng
Kudus, Jateng
Tegal, Jateng
Blitar, Jatim

Region 3 (Others)
Banyuwangi, Jatim
Nganjuk, Jatim
Sampang, Jatim
Serang, Banten
Jakarta Pusat (City), DKI
Bekasi (City), Jabar
Malang (City), Jatim
Denpasar (City), Bali

Lombok Timur, MTB
Pontianak, Kalbar
Kutai Kartanegara, Kaltim
Pangkep, Sulsel
Maluku Tenggara, Maluku
Banjarbaru (City), Kalsel
Investigators and implementer

• Investigators
  – PI: NTP manager
  – Co-PI: from implementing agency

• Implementing agency
  – National Institute of Health Research and Development (?)
  – University (?)
  – Other institute/agency (?)
Technical assistance needs

- Protocol development
- Study design and field operations
- Record-linkage
- Data analysis
# Timelines

<table>
<thead>
<tr>
<th>No</th>
<th>Activities</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q4</td>
<td>Q1</td>
</tr>
<tr>
<td>1</td>
<td>Protocol development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Mapping of health facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data collection (collect data, entry and matching)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Data analysis and report writing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 4  | Data analysis and report writing                    |            |            |            |            |
# Draft budget

<table>
<thead>
<tr>
<th>No</th>
<th>Activities</th>
<th>Budget (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Protocol development</td>
<td>15,000</td>
</tr>
<tr>
<td>2</td>
<td>HR (data collection team)</td>
<td>15,667</td>
</tr>
<tr>
<td>3</td>
<td>HR (Local Technical assistance)</td>
<td>20,000</td>
</tr>
<tr>
<td>4</td>
<td>Mapping of health facility</td>
<td>30,333</td>
</tr>
<tr>
<td>5</td>
<td>Data collection (collect data, entry and matching)</td>
<td>116,667</td>
</tr>
<tr>
<td>6</td>
<td>Data collection equipment and communication facilities</td>
<td>2,167</td>
</tr>
<tr>
<td>7</td>
<td>Data analysis and report writing meeting</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>209,833</strong></td>
</tr>
</tbody>
</table>
Thank you – Terima kasih