Assessment of the performance of TB surveillance in Indonesia
main findings, key recommendations and associated investment plan

Accra, Ghana
April 30th 2013
Babis Sismanidis
on behalf of the country team
Goal of TB surveillance

Monitor disease for action

- Quantify the burden of TB
- Focus interventions against disease
- Monitor effectiveness of control programs by quantifying trends

### INDONESIA

<table>
<thead>
<tr>
<th>Category</th>
<th>NUMBER (thousands)</th>
<th>RATE (per 100 000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality (excludes HIV+TB)</td>
<td>65 (29-120)</td>
<td>27 (12-48)</td>
</tr>
<tr>
<td>Prevalence (includes HIV+TB)</td>
<td>580 (310-1 200)</td>
<td>281 (130-489)</td>
</tr>
<tr>
<td>Incidence (includes HIV+TB)</td>
<td>450 (370-540)</td>
<td>187 (155-222)</td>
</tr>
<tr>
<td>Incidence (HIV+TB)</td>
<td>15 (11-20)</td>
<td>6.2 (4.4-8.3)</td>
</tr>
<tr>
<td>Case detection, all forms (%)</td>
<td>70 (59-85)</td>
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**TB mortality, HIV-negative**

50% reduction target

**TB mortality, HIV-positive**
Strengthening surveillance and impact evaluation: setting the scene

• New evaluation strategy agreed by TERG*, June 2012

• Contribution agreement for joint work by GF and WHO to implement strategy (health sector, TB, HIV, malaria)

• Building on ongoing programme reviews and evaluations together with partners

• Systematic assessment of routine surveillance and M&E capacity linked with M&E investment plans

• Emphasis on high impact, high priority countries (e.g. Indonesia)

* Global Fund's Technical Evaluation Reference Group
Standards & benchmarks for assessing performance of TB surveillance system

- TB disease specific standardized checklist developed by WHO Global Task Force on TB Impact Measurement

- 13 standards and associated benchmarks
  - 9 on measurement of TB cases (data quality and coverage)
  - 1 on measurement of deaths (data quality and coverage)
  - 3 standards on special populations
# Checklist of Standards and Benchmarks for TB Surveillance and Vital Registration Systems

**B1. TB Surveillance System Data Quality**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Benchmark(s)</th>
<th>Results</th>
</tr>
</thead>
</table>
| B1.2 TB surveillance system is designed to capture a minimum set of variables for reported TB cases | Data are routinely collected for at least each of the following variables:  
- Age or age group  
- Sex  
- Year of registration  
- Bacteriological results  
- History of previous treatment  
- Anatomical site of disease  
- For case-based systems, a patient identifier (e.g. numeric ID) | ☒ Met  
☒ Partially met  
☐ Not met |

## Results (Description) & Corrective Action(s)

<table>
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<tr>
<th>Results</th>
<th>Corrective Action(s)</th>
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</table>
| “Have you received TB drugs before, for at least 1 month”  
- Patient identifier does not exist yet.  
- Phase II of SITT will include a patient identifier. To be further discussed (e.g. province, district, health facilities code)  
- National ID cards are issued for everyone 17 years and above (EKTP-electronic ID cards being rolled out) | - Ensure the plan that already exists for the generation of unique ID’s is implemented  
- Consider using national ID# for tracking transfer patients across provinces and treatment episodes, checking duplicates and for linking patients in TB system with other systems (e.g. HIV) |
Process of implementation

• Why
  – To assess the national surveillance system’s ability to accurately measure TB cases and deaths
  – To develop a proposed M&E investment plan to address issues identified and gaps in knowledge about disease burden (absolute level and trends)
  – To feed into Joint External Monitoring Mission (AKA Programme Review) under the theme on strengthening surveillance
  – (To update estimates of TB disease and trends over time)

• When
  – Introductory visit: 18 January 2013
  – Constant communication to ensure all material (data, guidelines, reports, forms) are available during implementation meeting
  – Checklist implementation: 4-8 February 2013
Process of implementation (cont.)

• Who
  – Task Force on TB Impact Measurement members (Babis, Norio, Matteo)

• What
  – Analysis of time series of available national and sub-national surveillance data
  – Desk review of national guidelines, strategic plans, reports, SOPs, data collection and reporting forms, electronic recording and reporting systems
  – Interview with NTP & other stakeholders (including NIHRD, National Bureau of Statistics)
System Description

• Based on WHO-recommended paper-based system with quarterly reporting of cases:
  health facility -> 497 district-> 33 provinces -> national

• Transitioning to web- and case-based electronic recording and reporting system – Surveillance Integrated Tuberculosis Information (SITT) System
  – Data entry at district level (June 2013)
  – Data entry at facility level to follow
  – [http://sitt.depkes.go.id](http://sitt.depkes.go.id)

• TB mortality measured through vital registration data (ICD-10 in hospitals, verbal autopsy (VR) in community)
  – IMRSSP: pilot 2 sites in 2006, 4 sentinel sites 2007-8
  – Nationally representative sample registration system 2012-4
## Data Quality

<table>
<thead>
<tr>
<th>Standard</th>
<th>Main findings</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B1.1</strong> Case definitions consistent with WHO guidelines</td>
<td>Case definitions are consistent with WHO guidelines</td>
<td>MET</td>
</tr>
<tr>
<td><strong>B1.2</strong> TB surveillance system designed to capture a minimum set of variables for reported TB cases</td>
<td>- All core variables are captured, except unique patient identifier &lt;br&gt; - Phase II of SITT will include electronic ID card numbers (national rollout ongoing)</td>
<td>PARTIALLY MET</td>
</tr>
<tr>
<td><strong>B1.3</strong> All scheduled periodic data submissions received and processed at the national level</td>
<td>- 4 x 483/497 (97%) of expected district-level quarterly reports were received and processed at national level in 2011 &lt;br&gt; - 14 districts (from 3 provinces) did not submit reports</td>
<td>PARTIALLY MET</td>
</tr>
<tr>
<td>Standard</td>
<td>Main findings</td>
<td>Result</td>
</tr>
<tr>
<td>----------</td>
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</tr>
<tr>
<td><strong>B1.4</strong> Data in quarterly reports are accurate, complete, and internally consistent <em>(For paper-based systems only)</em></td>
<td>Data audit in nationally representative sample of health facilities not yet done</td>
<td><strong>NOT MET</strong></td>
</tr>
<tr>
<td><strong>B1.5</strong> Data in national database are accurate, complete, internally consistent, and free of duplicates <em>(For electronic case- or patient-based systems only)</em></td>
<td>SITT Phase II (case-based) will only go live in June 2013</td>
<td><strong>NOT APPLICABLE</strong></td>
</tr>
<tr>
<td><strong>B1.6</strong> TB surveillance data are externally consistent</td>
<td>The percentage of new, all forms, childhood (0-14 years) over total TB notifications in 2011 was 8.7%, within the acceptable range of (5%-15%) for low- and middle-income countries</td>
<td><strong>MET</strong></td>
</tr>
<tr>
<td><strong>B1.7</strong> Number of reported TB cases is internally consistent <em>(within country)</em></td>
<td>Not possible to assess trends in case notifications (excluding PPM contribution is not possible before 2012) and TB mortality (sample VR data not analyzed yet)</td>
<td><strong>NOT MET</strong></td>
</tr>
</tbody>
</table>
Other indicators were investigated (under various thresholds) but with disappointing results.

Sex ratio (M:F) is between 1.3-2.0 when HIV prevalence in TB cases is < 50% and 0.8-1.2 when HIV prevalence in TB cases is > 50% (green=pass, red=fail)

Sex ratio (M:F) is between 1.0-3.0 when HIV prevalence in TB cases is < 50% and 0.8-1.2 when HIV prevalence in TB cases is > 50% (green=pass, red=fail)
Are these trends of notification rates consistent?
Internal Consistency

• *Method 1*: "eye-balling" time trends of notification data

• *Method 2*: defining the allowable difference according to an expected rate of change:

\[|N_1 - N_2| \leq a \sqrt{N_1 + (1 + k)^2N_2}\]

(*k* is the "expected" rate of change based on population growth and notification rate between 2 years, *N_1* and *N_2* total notifications over two years and *a* an "allowable" multiplication factor)

• *Method 3*: statistical test (chi-square test of trend)

**ALL WITH DISAPPOINTING RESULTS**
Internal Consistency (cont.)

One last try: quality control charts

- Graphs used to study process changes over time (e.g. notification data over quarters). Process is monitored based on control limits determined from historical data.

- When "out-of-control" signals are identified, investigate the cause.
- Could self-starting control charts for short runs work?
## Population Coverage and Vital Registration

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<th>Main findings</th>
<th>Result</th>
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</table>
| **B2.1** All diagnosed cases of TB are reported | • TB reporting is NOT a legal requirement  
• No national study to measure the level of under-reporting has been done | **NOT MET** |
| **B2.2** Population has good access to health care | • Under-5 mortality rate is 32 per 1000 live births, higher than the 10 per 1000 recommended threshold  
• Out-of-pocket total health expenditure is 38%, higher than the 25% recommended threshold  
• Current expansion of health insurance coverage scheme is ongoing | **NOT MET** |
| **B3.1** Vital registration system has high national coverage and quality | • No national level vital registration system with standard coding of causes of death in place  
• Nationally representative sample registration system is being developed  
• IMRSSP sentinel data are available (2006-2011), not yet fully analyzed and widely disseminated | **NOT MET** |
## Special Populations

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<th>Main findings</th>
<th>Result</th>
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</table>
| **C1** Surveillance data provide a direct measure of drug resistant TB in new cases | • No national drug resistance survey, but provincial level ones in Central and East Java  
• National survey protocol currently being developed  
• Optimal design for DR surveillance currently under discussion (e.g. sentinel) | **NOT MET** |
| **C2** Surveillance data provide a direct measure of the prevalence of HIV infection in TB cases | Coverage of HIV testing among TB patients is improving but still low. The target is for all TB cases to be tested for HIV in provinces that are in a generalised epidemic state | **NOT MET** |
| **C3** Surveillance data for children reported with TB are reliable and accurate  
*OR*  
all diagnosed childhood TB cases are reported | • Ratio of 0-4/5-14 notification rates is 1.8 for 2011  
• No nationwide level inventory study to measure the level of under-reporting in childhood TB | **PARTIALLY MET** |
## Findings: Overview

<table>
<thead>
<tr>
<th>Data Quality</th>
<th>Population Coverage</th>
<th>Vital Registration</th>
<th>Special Populations</th>
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<tbody>
<tr>
<td>Out of 7 standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 met</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 partially met</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 not met</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 1 not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Out of 2 standards</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• 2 not met</td>
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<td></td>
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<tr>
<td>Out of 1 standard</td>
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<td></td>
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<tr>
<td>• 1 not met</td>
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<tr>
<td>Out of 3 standards</td>
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<tr>
<td>• 1 partially met</td>
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<tr>
<td>• 2 not met</td>
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3-4 Key Recommendations (short-term)

1. Strengthening data management and analytical capacity in NTP and NIH RD (e.g. courses, on-the-job training)

2. Technical assistance on the data cleaning and analysis of existing TB data (e.g. health surveys, VR)

3. Link up with WHO/GF to conduct the Service Availability and Readiness Assessment (SARA) of the health information system
   - Specifically the data quality TB module

4. Improve national surveillance of causes of death
   - Further analyze existing sample vital registration data and use in TB burden estimation
3-4 Key Recommendations (mid-term)

1. Improve national surveillance of causes of death
   1. Explore scaling up of routine sample vital registration system, including causes of death
   2. Move from project-based approach into a national system

2. Examine the conduct of a national inventory study to directly assess under-reporting of cases
   1. Measure under-reporting and, if possible, under-diagnosis
   2. Mapping of health providers, link with PPM expansion
   3. Address pediatric under-reporting

3. Encourage comprehensiveness of case reporting and detection by adopting a policy of mandatory notification of TB
Follow-up after implementation

• Findings fed into recommendations of the JEMM
  – Briefing with the Minister of Health

• Detailed report including section on M&E investment plan

• Continuous consultation between NTP, Global Fund, WHO CO & HQ
<table>
<thead>
<tr>
<th>Activity</th>
<th>Estimated Budget</th>
</tr>
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<tbody>
<tr>
<td>Vital registration – maintaining and scaling up the SRS</td>
<td>Costs between USD $0.5-$1 per capita in the areas covered</td>
</tr>
<tr>
<td>Inventory study to measure the level of under-reporting</td>
<td>US$ 200,000</td>
</tr>
<tr>
<td>Capacity building for data management and statistical analysis – through attending courses and extra staffing at the central level</td>
<td>US$ 115,901</td>
</tr>
<tr>
<td>SARA tool and health facility data quality assessment</td>
<td>US$ 100,000</td>
</tr>
<tr>
<td>Assessment of the SITT Phase 2 in 2014</td>
<td>US$ 38,575</td>
</tr>
<tr>
<td>Implementing mandatory notification policy</td>
<td>US$ 99,518</td>
</tr>
<tr>
<td>Analysis of available mortality data</td>
<td>US$ 10,000</td>
</tr>
<tr>
<td>Drug resistance survey or sentinel surveillance</td>
<td>US$ 278,806</td>
</tr>
<tr>
<td>Nationally representative survey of HIV prevalence among TB patients</td>
<td>US$ 56,548 (only sentinel surveillance in 6 sites (concentrated and generalized area))</td>
</tr>
<tr>
<td>Corrective actions required to compile all the reports from Papua</td>
<td>US$ 16,000</td>
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