WHO Task Force Framework on assessment of surveillance data - Revisiting the "Onion model"

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Task Force on TB Impact Measurement

**Mandate**

- To produce a robust, rigorous and widely-endorsed assessment of whether the 2015 targets for reductions in TB incidence, prevalence and mortality are achieved at global level, for each WHO Region and in individual countries
- To regularly report on progress towards these targets in the years leading up to 2015
- To strengthen national capacity in monitoring and evaluation of TB control

Responding to country concerns and demands
Task Force on TB Impact Measurement

3 strategic areas of work

- Use of routine surveillance data to measure incidence, prevalence and mortality (all countries)

- Prevalence of TB disease surveys in at least 21 global focus countries

- Periodic review and revision of methods used to translate data from surveillance systems and surveys into estimates of disease burden
Task Force framework for the assessment of TB surveillance data

DATA QUALITY
- Completeness
- No duplications, no misclassifications
- Internal and external consistency

IMPROVE
surveillance system

TRENDS
Do surveillance data reflect trends in TB incidence and mortality?
- Analyse time-changes in notifications and recorded deaths alongside changes in case-finding, case definitions, HIV prevalence and other determinants of changes in TB incidence and TB mortality

EVALUATE
trends and impact of TB control

ARE ALL TB CASES AND DEATHS CAPTURED IN SURVEILLANCE DATA?
- "Onion" model
- Inventory studies
- Capture re-capture studies
- Prevalence surveys
- Innovative operational research

UPDATE
estimates of TB incidence and mortality

TB notifications ≈ TB incidence
TB deaths in VR system ≈ TB mortality

If appropriate, CERTIFY
TB surveillance data as direct measure of TB incidence and mortality
The Onion Model

All TB cases

- Notified cases
  - Recorded in notification data
  - Diagnosed by NTP or collaborating providers
  - Diagnosed by public or private providers, but not notified
  - Presenting to health facilities, but undiagnosed
  - Access to health facilities, but don’t go
  - No access to health care

Undiagnosed cases
What is needed to increase the fraction of notified TB cases

1. Recorded in notification data
2. Diagnosed by NTP or collaborating providers but not reported
3. Diagnosed by public or private providers, but not notified
4. Presenting to health facilities, but undiagnosed
5. Access to health facilities, but don't go
6. No access to health care

PPM

Supervision, investment in recording and reporting

HSS strengthening

Communication, social mobilization

PAL, Laboratory strengthening

Programmatic or health system interventions
What is needed to quantify the fraction of TB cases missing from the notification data

- Inventory studies
- Vital registration data
- Capture-recapture studies
- Prevalence of TB disease surveys (health care seeking behaviour)
- Innovative operational research
Substantiating expert opinion

- **Access to health** from demographic and health surveys data *(Layer 6)*
- **Overall performance of health systems** as measured by: *(Layer 5, 6)*
  - Infant mortality ratio
  - Number of primary health care units or doctors per population
  - % of assisted births
- **Performance of TB diagnostic systems** *(Layer 4, 5)*
  - % people who died from TB (Vital registration data) and never accessed TB diagnosis and treatment
  - EQA of labs
  - KAP studies (health seeking behaviour), delay studies
- **Contribution of different TB care providers** *(Layer 3)*
  - Health expenditure in the private or nongovernmental sector, out-of-pocket expenditure
- **TB drug distribution** *(Layer 2)*
Tanzania

Most districts have high cure rates and low death rates ...

... but there are still districts with low cure rates and high death rates
Tanzania

TB diagnostic centers have increased
… but there is still an uneven distribution across regions
Tanzania

93% pop within 10 km basic health care unit

... but infant mortality still high
Tanzania

Increase in diagnosis of TB following introduction recent interventions
# Estimates in Tanzania before and after discussions

<table>
<thead>
<tr>
<th>Onion layers (% total new cases missed in each layer)</th>
<th>Before discussions</th>
<th>After discussions</th>
<th>Source of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. No access to health care</td>
<td>6.3</td>
<td>6.3</td>
<td>-93% pop within 10 km basic health care unit</td>
</tr>
<tr>
<td>5. Access but do not go</td>
<td>2.7</td>
<td>5</td>
<td>↑ diagnosis TB following introduction recent interventions</td>
</tr>
<tr>
<td>4. Presenting but not diagnosed</td>
<td>2.4</td>
<td>9</td>
<td>↑ diagnostic delay</td>
</tr>
<tr>
<td>3. Diagnosed by public non-NTP</td>
<td>0.9</td>
<td>0.9</td>
<td>- Exclusive distribution of TB drugs by NTP</td>
</tr>
<tr>
<td>2. Diagnosed by NTP but not notified</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Sum of % of missing cases: layers 2 to 6</td>
<td>13.8</td>
<td>24</td>
<td>-</td>
</tr>
<tr>
<td>Country's CDR (2007)</td>
<td>86.2</td>
<td>75</td>
<td>-</td>
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Thank you