Components of a good surveillance system and future plans for improvement in the EMR

Dr Amal Bassili
Stop TB unit, WHO, Regional Office for the Eastern Mediterranean Surveillance Workshop,
Cairo Sheraton,
Cairo, Egypt, 27-29 October 2009
Overview

Public health surveillance is the ongoing systematic collection, analysis and interpretation of outcome-specific data, closely integrated with the timely dissemination of these data to those responsible for taking public health action to prevent and control disease or injury.

Overview

• A health information system records and reports information on the health of a population from a variety of demographic, logistical, programme-management and health-status indicators.

• The results are used for national health planning, policy-setting and targeted outcomes.

• Public health surveillance is an essential component of the health information system with objectives and methods that inform action for public health.
From a presentation by Dr G Rodier, Director, Division of Communicable Disease Surveillance and Response, WHO at the WHO Global Consultancy on Surveillance meeting held in Geneva in October 2003.
Overview

A functional surveillance system should:

– have clear objectives;
– use minimal relevant data collection for appropriate action;
– address a defined target population;
– have specified sources of data (including health facility records (public/private), laboratory results, case reports, surveys, and systems assessment reports); and
– incorporate a well-identified information flow with feedback and information-dissemination mechanisms in place.
Criteria of evaluating surveillance systems

• Surveillance systems are generally evaluated according to the following attributes:
  – Simplicity.
  – Flexibility.
  – Acceptability.
  – Sensitivity.
  – Positive predictive value.
  – Representativeness (Completeness, Public/Private).
  – Timeliness.
  – Adequately resourced (cost of training, travel, supplies, equipment and services).
Surveillance and Monitoring and Evaluation

- M&E of programme 1 (e.g. NTP)
- M&E for control programme 2 (e.g. NAP)
- M&E for control programme 3 (e.g. Infection control)
- M&E for control programme 4 (e.g. Malaria)

Health Information System

TB Surveillance

HIV/AIDS surveillance

Malaria surveillance

Surveillance on nosocomial transmission
Components of an effective surveillance/M&E systems for TB control

1) Presence of a sound M&E plan to document all the components of the system:
   1. Structure, organization
   2. R&R tools
   3. Data flow
   4. Data quality assurance activities (data verification at all levels, supervision, quarterly meetings)
   5. M&E framework with indicators (Onion model)
   6. Relational Database (ENRS, Access, SQL, etc..)
   7. Human resources: surveillance officers with background in epidemiology; human resources development plan
   8. Coordination of activities
   9. Evaluation and research
   10. Challenges and ways forward
   11. Budgeted M&E workplan
Components of an effective surveillance/M&E systems for TB control

2) Core capacities should be realized at each level for the detection, registration and reporting of data, local analysis, interpretation, action, laboratory response, investigation, feedback, monitoring and evaluation.

• The focus of action and decision-making based on the surveillance data should be at the local level (district level).

• Each level of the health system – from the community and health facility (public/private) to the district, provincial and national and international levels – has a role in performing good disease surveillance and in using information for action.
Components of an effective surveillance/M&E systems for TB control

3) The provision of technical standards is essential for system efficacy – surveillance is more effective when supported by standards, norms, guidelines, tools, training, communication systems, and adequate financial, human and material resources.
Components of an effective surveillance/M&E systems for TB control

4) The provision of technical standards is essential for system efficacy –
Detection of diseases and other public health problems is strengthened by the availability of standardized case definitions, disease-control objectives, reporting requirements and standardized forms.

Recording and Reporting tools (revised R&R)
Components of an effective surveillance/M&E systems for TB control

5) The provision of technical standards is essential for system efficacy – System efficiency requires clear reporting procedures on how to move data from one level to the other and methods for providing feedback to the reporting units.
Components of an effective surveillance/M&E systems for TB control

6) The provision of technical standards is essential for system efficacy – Data Quality Assurance through the following mechanisms:

• 1 Data verification at all levels

• 2 Supervisory visits with standardized checklist and feedback reports (copy distributed)

• 3 Quarterly meetings with objectives and guidelines
Components of an effective surveillance/M&E systems for TB control

7) The presence of an electronic nominal Recording and Reporting system with the following criteria:

– Covering the 4 registers: suspects; lab; TB; contacts and their reports
– Covering supplies management (drugs and lab);
– Non-NTP and community R&R
– Data quality verification mechanism with indicators
– Quality: Completeness (reports/cells), timeliness, accuracy, consistency
Components of an effective surveillance/M&E systems for TB control

8) Conducting Operational Research to

- generate new knowledge (risk factor, risk groups, etc)
- evaluate the impact of control measures by estimating disease burden (disease prevalence surveys, capture recapture studies, vital registration, verbal autopsy studies, etc.)
- evaluate gaps in programme performance and disease control
- test new interventions such as new tools (vaccines/diagnostics/drugs/drug regimens); or new public health strategies (e.g. new PPM models)
- Evaluate the impact of ACSM activities by conducting KAP studies
- devise solutions: evidence-based public health actions
Components of an effective surveillance/M&E systems for TB control

9) Surveillance produces information that should be linked with public health action – this requires
- Data analysis and interpretation of results
- Qualified human resources (epidemiology/biostatistics/good analytical skills)

• Public health leaders and programme managers should use the information to describe the location and duration of problems, and the affected population. The result is evidenced-based decision-making that targets specific actions for control and prevention of public health problems.
<table>
<thead>
<tr>
<th>Surveillance activities</th>
<th>Information obtained</th>
<th>Public health action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine quarterly case finding reports from district, intermediate to national level and subnational analysis of data</td>
<td>Trend of TB notification across space (geographical/centres) and time (over quarter/years)</td>
<td>Investigating the reasons of any inconsistency in notification across space and time</td>
</tr>
<tr>
<td>Estimating the tuberculosis disease burden in a country and annual trend of infection or disease</td>
<td>Progress towards the achievement of the Stop TB targets</td>
<td>Enhanced programme activities in case of slow progress</td>
</tr>
<tr>
<td>High default rate</td>
<td>Inadequate defaulter tracing mechanism</td>
<td>Innovative intervention(s) to strengthen treatment support with mobilization of requested resources.</td>
</tr>
<tr>
<td>Low rate of cases detected by other health care providers (non-NTP) whether by referral of suspects or diagnosis, treatment and notification</td>
<td>Suboptimal engagement of the other health care providers in tuberculosis control</td>
<td>Enhanced Public-Private Mix-Mobilization of resources for these activities.</td>
</tr>
<tr>
<td>Unavailability of information about the proportion of TB suspects, defined a suffering from cough for 2-3 week, identified in the outpatient clinics (OPD) of chest centers and</td>
<td>Inadequate tuberculosis suspect management in the country</td>
<td>Introducing the TB suspect register in the OPD of the chest centers and in the PHC and ensuring testing all registered suspects-Mobilization of resources for these activities.</td>
</tr>
<tr>
<td>Operational research activities</td>
<td>Information obtained</td>
<td>Public health action</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Disease prevalence surveys; capture recapture studies; VR/verbal autopsy studies</td>
<td>Accurate revised estimates of TB burden and determining trends over time and space in TB burden</td>
<td>Evaluating progress towards the targets with investigations to identify the causes of increased TB transmission, if annual increase was reported</td>
</tr>
<tr>
<td>Drug resistance surveys</td>
<td>The burden and trends of drug resistance determined as well as predictors of drug resistance</td>
<td>Policy change: e.g. Change criteria for 1st line DST testing in case of increased transmission; strengthen DOT, etc.</td>
</tr>
<tr>
<td>Active case finding among contacts</td>
<td>The incidence of TB among contacts reported (3-5% in several reports)</td>
<td>To integrate ACD with PCD in the routine programme activities for the contacts that do not show up</td>
</tr>
<tr>
<td>Testing new PPM model</td>
<td>Effectiveness and feasibility of the model reported</td>
<td>Expansion of the tested model in routine programme activities</td>
</tr>
</tbody>
</table>
## Situation and Future plans

<table>
<thead>
<tr>
<th>Components</th>
<th>EMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-M&amp;E plan</td>
<td>All GFATM supported countries have to develop an M&amp;E plan with technical support from WHO</td>
</tr>
<tr>
<td>2-Surveillance Level</td>
<td>All NTPs have identified their reporting levels- but not yet extended to all non-NTP and community</td>
</tr>
<tr>
<td>3-Technical standards: tools, guidelines, training manuals</td>
<td>All NTPs have developed their tools, guidelines, some have developed PPM guidelines and few developed tools for community participation</td>
</tr>
<tr>
<td>4-Recording and reporting tools (revised system)</td>
<td>Few NTPs have introduced the revised R&amp;R – commitment to introduce it by the end of 2009</td>
</tr>
<tr>
<td>5-Data flow</td>
<td>All NTPs have identified their data flow systems- but not yet extended to all non-NTP and community</td>
</tr>
<tr>
<td>6-Data quality assurance system</td>
<td>Weak mechanisms of data verification, supervisory visits, and quarterly meetings in most of the countries</td>
</tr>
</tbody>
</table>