Indicators for malaria elimination programs

Adam Bennett
Malaria Elimination Initiative, GHG, UCSF

APMEN SRWG
October 19, 2016
Overview

1) Context: Updates to global guidance for malaria elimination programs (ie. WHO Elimination Manual for Elimination revision)

2) Improved documentation of program indicators for elimination needed
Approach

- Review of all potential indicators
  - Existing and newly developed
  - Published and grey literature

- Consensus building, prioritization, and incorporation of feedback
  - APMEN, WHO, CHAI, MEG, E8, etc

- Feedback into update of Elimination Field Manual
  - SME-TEG & ERG

- Minimum essential + additional programmatic and downstream indicators
  - Specific and measurable, operationally feasible for program collection
Work to date

1. Background review and draft M&E framework (logic model) for malaria elimination
   • We started with elimination program activities and then matched up indicators
2. Compilation of reference list of indicators used by malaria elimination programs
3. Comments on indicators included in Malaria Elimination Manual and Surveillance Guidelines for Elimination
4. APMEN Surveillance and Response working group, Phuket, May 2015
5. Feedback and teleconferences with SME-TEG members
6. Reduced set of indicator tables to support Elimination Field Manual ERG
Defining indicators based on program stages or transmission

Transmission

- Aggregate case reporting
- Case based, rapid reporting
- Timely case investigation and response
- Outbreak response

National, District, Facility

Foci, Case, Rapid
Compilation of reference list of indicators used for malaria elimination

- Indicators split into 5 topic areas: epidemiology, surveillance and response, case management, vector surveillance and control, policy framework.
- Each indicator is defined, noted during the stage of elimination it is most relevant.
- Necessary and potential disaggregation/stratification noted.
- If the indicator is listed in the WHO Field Manual (2007) or Surveillance Manual (2012), it is indicated in the Comments column.
- Comments and caveats from feedback process.
- Prioritization of essential list through APMEN SRWG (“High”, “Moderate”, “Low”) – based upon programmatic relevance and feasibility of collection.
<table>
<thead>
<tr>
<th>#</th>
<th>Indicator name</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Program stage</th>
<th>Disaggregation/stratification</th>
<th>Comments</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Completeness and timeliness of passive surveillance reporting</td>
<td>Number of passive health facility reports received in previous year which contain non-missing aggregate counts of confirmed malaria cases, and which were delivered to the appropriate reporting system within one week of the due date for the report</td>
<td>Total number of private and public health facilities in geographic area multiplied by the number of reporting periods per annum</td>
<td>Pre-elimination, Elimination</td>
<td>Type of facility (public and private), geographic area</td>
<td>Notes: Needs to be interpreted in combination with timeliness information/indication especially as program proceeds towards elimination/POR. In WHO Surveillance Manual (<em>Percentage of expected monthly reports received from health facilities and laboratories with number of patients tested for malaria and number positive</em>) In WHO Field Manual (<em>Completeness: proportion of cases reported to surveillance system</em>). System needs to include zero reporting.</td>
<td>High</td>
</tr>
<tr>
<td>13</td>
<td>Proportion of private health facilities reporting to health information system</td>
<td>Number of private health facilities providing malaria services reporting to the national health information system</td>
<td>Number of private health facilities providing malaria services</td>
<td>All</td>
<td>Type of facility, geographic area</td>
<td>Concern: Should “providing malaria services” be included? How to define “providing malaria services”? In WHO Surveillance Manual (<em>Time from positive test result to notification of the national malaria programme to district or intermediate level, with copy to central level</em>) In WHO Field Manual (<em>Protocol for private clinics:</em> “Proportion of private facilities reporting to NMSS”)</td>
<td>High</td>
</tr>
<tr>
<td>14</td>
<td>Human Blood Examination Rate</td>
<td>Total number of parasitological malaria tests (RDT/microscopy or other lab-based DNA test) conducted during the reporting period</td>
<td>Total number of person years at risk for malaria</td>
<td>Pre-elimination, Elimination, POR, Certification</td>
<td>Geographic areas, risk groups, active vs. passive</td>
<td>In WHO Surveillance Manual (<em>Annual blood examination rate by district and focus</em>)</td>
<td>High</td>
</tr>
<tr>
<td>15</td>
<td>Proportion of suspected malaria cases tested for malaria</td>
<td>Total number of malaria tests administered to patients presenting at public and private health facilities with suspected malaria ≥ 100</td>
<td>Total number of patients with suspected malaria presenting at public and private health facilities or other testing points</td>
<td>Pre-elimination, Elimination, POR</td>
<td>Type of facility/system, geographic area</td>
<td>Notes: When individual database register data available</td>
<td>High</td>
</tr>
<tr>
<td>16</td>
<td>Proportion of cases of malaria which are laboratory confirmed</td>
<td>Total number of laboratory confirmed cases of malaria during the reporting period</td>
<td>Total number of malaria cases reported in the surveillance system</td>
<td>Pre-elimination</td>
<td>Type of facility/system, geographic area</td>
<td>Notes: Includes non-confirmed malaria cases in denominator; Care needs to be taken in how “suspected” cases are handled to avoid double counting</td>
<td>High</td>
</tr>
</tbody>
</table>
## Minimum essential transmission indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Key considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Parasite Index</td>
<td>Population at risk denominator a key consideration</td>
</tr>
<tr>
<td>Total number of confirmed cases</td>
<td>Essential to differentiate local from imported – which ones matter?</td>
</tr>
<tr>
<td>Ratio of local : imported cases active foci</td>
<td>Can support estimation of probability that $R_c &lt; 1$ sub-nationally. Which imported cases matter- only receptive areas</td>
</tr>
<tr>
<td>Number and population of foci by classification</td>
<td>Identification of foci varies</td>
</tr>
</tbody>
</table>
## Minimum essential surveillance indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Key considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness of passive surveillance reporting</td>
<td>Needs to include the private sector</td>
</tr>
<tr>
<td>Timeliness of passive surveillance reporting</td>
<td>Needs to include the private sector</td>
</tr>
<tr>
<td>Human Blood Examination Rate</td>
<td>Historical rationale is to contextualize API and SPR/TPR – but does this lead to over-testing</td>
</tr>
<tr>
<td>Proportion of suspected malaria cases tested for malaria</td>
<td>Definition of suspected malaria case and individual case linkage of OPD &amp; lab registry required</td>
</tr>
<tr>
<td>Proportion of cases confirmed</td>
<td>Method of confirmation varies</td>
</tr>
<tr>
<td>Proportion of cases investigated / classified</td>
<td>Classification systems highly variable (local/imported)</td>
</tr>
<tr>
<td>Proportion of new active foci fully investigated</td>
<td>Foci definition highly variable – country specific</td>
</tr>
</tbody>
</table>
Activity specific indicators

- Reactive case detection
  - RACD tool
- Mass/targeted treatment
- Vector surveillance and control
- High risk population assessment/surveillance
Summary and next steps

1. SME TEG / ERG guidance on scope of work going forward

2. Detailed reference guide for essential indicators – highlighting data collection requirements