The malaria surveillance system assessment toolkit; a standardized approach for supporting surveillance system strengthening

May 2021
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Objectives

• To provide an overview of the scope of work for the malaria surveillance assessment toolkit
• To provide a status update on development of the toolkit
• To outline next steps and timelines for the toolkit
What

A systematic approach to measuring the performance of malaria surveillance systems, and identifying and evaluating the determinants of that performance.

Where

All malaria endemic countries should carry out a surveillance system assessment.

Who

Implemented by national malaria programmes and partners interested in malaria surveillance strengthening.

When

 Undertaken at any time but recommended as part of key NMP planning milestones such as a Malaria Programme Review (MPR) and National Strategic Plan (NSP) development.

Why

To provide actionable and prioritized recommendations on how to strengthen surveillance systems for malaria control and elimination.
The malaria surveillance assessment toolkit was developed to expand on surveillance guidance and respond to gaps in need for comparable assessments.

**GAP:** Lack of standardization between tools and approaches used in the past - difficult to compare over time/ between countries

**METHOD:** Existing materials were compiled and reviewed to identify gaps for where new tool development was required

**RESULT:** *The Malaria Surveillance Assessment Toolkit* is single, standardized framework and set of tools which can be adapted to any context for malaria surveillance assessments aimed at the identification of key actionable gaps in malaria surveillance.
Any malaria surveillance assessment conducted using the Toolkit will include a minimum set of priority indicators and generate common and consistent expected outputs. This ensures findings are comparable across countries and between assessments within a country over time.

The toolkits have the following characteristics:

- **Adaptable assessment framework:**
  - User can define the **assessment scope**, by choosing the surveillance strategies and the indicators to be covered by the assessment.
  - The **data collection tools within the Toolkit can be selected and filtered** accordingly.
  - The assessment framework has been developed to assess surveillance in burden reduction and elimination settings.

- **Standardized package of tools:**
  - Any malaria surveillance assessment conducted using the Toolkit will include a minimum set of priority indicators and generate common and consistent expected outputs.
  - This ensures findings are comparable across countries and between assessments within a country over time.
The Toolkit consists of nine tools (below) with different functions and a Reference manual and implementation guide

<table>
<thead>
<tr>
<th>Function</th>
<th>Tools</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the scope</td>
<td>1  Assessment framework tool</td>
<td>A table of key objectives, sub-objectives, and indicators that can be used to quantify and/ or qualify strengths and weaknesses in the surveillance system. This tool should be used as the starting point in an assessment to define the scope and the approach.</td>
</tr>
<tr>
<td></td>
<td>2  Concept note and protocol</td>
<td>A template for the outline of a short concept note for refining the scope, methods, expected outputs and outcomes of an assessment and a more detailed protocol outline required for comprehensive assessments</td>
</tr>
<tr>
<td>Collect &amp; analyse data</td>
<td>3  Desk review template</td>
<td>A set of template tables and diagrams used to summarize what is known about malaria surveillance through document and data review, and optional interviews with surveillance programme staff and other relevant partners</td>
</tr>
<tr>
<td></td>
<td>4  Data Quality Assessment tools</td>
<td>Tools and guidance for collecting and analysing data to specifically assess data quality at desk and service delivery levels</td>
</tr>
<tr>
<td></td>
<td>5  Question Bank</td>
<td>A library of questions to develop survey questionnaires for data collection at service delivery levels</td>
</tr>
<tr>
<td></td>
<td>6  Analysis tools</td>
<td>Excel tools and code (in statistical software e.g., STATA) that can be adapted for data analysis for all data collected during a surveillance assessment</td>
</tr>
<tr>
<td>Develop and prioritize</td>
<td>7  Technical brief and Report outline and</td>
<td>A presentation and report template for organizing, visualizing, and interpreting results from the assessment. A technical brief is used to highlight a subset of priority results, where the complete report includes all assessment results.</td>
</tr>
<tr>
<td>recommendations</td>
<td>Presentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8  Assessment evaluation plan</td>
<td>An evaluation plan for evaluating the quality of a surveillance assessment implementation itself, which includes an indicator list, sample questionnaire, and expenditure tracker</td>
</tr>
<tr>
<td></td>
<td>9  Implementation log</td>
<td>A log for tracking surveillance assessments that have been implemented using the toolkit</td>
</tr>
</tbody>
</table>
• The Toolkit builds on the PRISM (Performance of Routine Information System Management) model by having a framework based on four objectives that a surveillance assessment can address.

• Under each objective is a set of defined sub-objectives that further detail what malaria surveillance performance is and what drives that performance.

• Under each sub-objective is a set of qualitative and quantitative indicators that are used to assess each sub-objective and can be measured by one or more of the data collection tools within the Toolkit.

• A subset of indicators have been flagged as ‘priority indicators’, representing the minimum set of metrics to be included in any malaria surveillance assessment conducted using the Toolkit. This allows the resulting standardised expected outputs to be comparable between countries and within the same country over time.
Four key objectives

Objective 1: Measure the performance of the surveillance system, which is defined by surveillance system coverage, data quality (completeness, timeliness and concordance and consistency) and data use.

Objective 2: Describe and evaluate contextual and infrastructural aspects of the surveillance that may influence performance. This includes an assessment of health sectors reporting, if minimum data is captured by each surveillance strategy, detail on information systems used, available documentation and guidelines and whether guidelines are adhered to, human and financial resources and partner support, and infrastructure.

Objective 3: Describe and evaluate process and technical aspects of the surveillance system that may influence performance. This includes an assessment of processes, tools and personnel involved with the flow of data from recording to response.

Objective 4: Describe and evaluate behavioral aspects of the surveillance system that may influence performance. This includes an assessment governance structures in place and the promotion of an information culture, as well as proficiency, motivation and accountability of staff involved in malaria surveillance within a country.
Sub-objectives and indicators (n)

**Determinants/ Inputs**
- Strategies
- Sectors
- Guidelines
- Information systems
- Support
- Resources
- Recording
- Reporting
- Analysis
- Data access
- Quality assurance
- Case management
- Governance
- Information culture
- Supervision
- Staff proficiency

**Performance/ Outputs**
- Context and Infrastructure (20)
- Process and technology (22)
- Behavior (13)

- Surveillance system coverage
- Quality
- Use

**Performance diagnosis (30)**

**Total indicators= 85**
**Total priority=55**
**Priority burden reduction= 41**
**Priority elimination=50**
**Priority other strategies= 23**
**Malaria surveillance strategies**

**Case surveillance**
*Burden reduction and/or elimination settings*

**Intervention implementation surveillance**
Chemoprevention: IPTp, IPTi, SMC, MDA
Vector control: ITNs distributed through routine channels and/or mass campaigns, IRS and larval control

**Other surveillance**
*Commodity tracking*
*Entomological surveillance*
*Drug resistance surveillance*
*Other genomic surveillance (pfhrp 2/3 gene deletions)*

**Assessment Framework**

Select indicators based on case surveillance setting
Review and select indicators based on interest/country context or priority/optional

Priority indicators for other strategies automatically selected. The goal of an assessment of these strategies is to understand what information is collected and how, and if it is integrated and used along with case surveillance data. The toolkit does not include data quality assessments for these surveillance strategies.
The scope will determine the assessment approach, which can be summarized in to 3 potential approaches:

<table>
<thead>
<tr>
<th>Scope</th>
<th>Rapid</th>
<th>Tailored</th>
<th>Comprehensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only priority indicators from all four objectives for case surveillance and all other surveillance strategies implemented in country</td>
<td>Priority indicators + user selected optional indicators of interest from the four objectives for case surveillance and priority indicators from other selected surveillance strategies</td>
<td>All indicators from all four objectives for case surveillance and priority indicators for all surveillance strategies implemented in country</td>
<td></td>
</tr>
<tr>
<td>Primarily limited to desk review only with few essential site visits</td>
<td>Desk review and surveys at different levels of the health systems (i.e., national, subnational, a sample of facilities and community healthcare workers)</td>
<td>Desk review and surveys at different levels of the health systems (i.e., national, subnational, a sample of facilities and community healthcare workers)</td>
<td></td>
</tr>
<tr>
<td>Ready-to-use tool within the Toolkit that can be downloaded*</td>
<td>Data collection tools are customized then downloaded**</td>
<td>Ready-to-use data collection tools can be downloaded</td>
<td></td>
</tr>
<tr>
<td>Low; 2-4 weeks</td>
<td>Medium/High; up to 12 months depending on data collection methods appropriate for the selected indicators and strategies to be assessed</td>
<td>High: a minimum of 3 months up to 12 months depending on context</td>
<td></td>
</tr>
<tr>
<td>Once every 3-5 years in line with the MPR and NSP development or if necessary, once a year as part of the annual programme review</td>
<td>Once every 3-5 years in line with the MPR and NSP development to assess the system comprehensively</td>
<td>Once every 3-5 years in line with the MPR and NSP development to assess the system comprehensively</td>
<td></td>
</tr>
</tbody>
</table>

*A separate workbook with all content for rapid assessments has been made available for ease of use

** customization within the web-app will be available in 2021. The current version can be manually filtered once downloaded
Conduct a [1] desk review of literature supplemented by interviews with programme staff and key stakeholders, [2] data quality assessment of retrospective data in national databases and source documents, and [3] a survey of surveillance staff at all relevant levels of the health system.

- Establish a steering committee of key stakeholders
- Define the assessment rationale, scope, objectives and methods in a concept note and/or protocol
- Customize selected data collection tools based on scope and country context

Gather all existing documentation and datasets

- Organize data collection trainings, as relevant
- Monitor/supervise data collection processes

Phase 1: Assessment initiation

Phase 2: Data collection and review

- Develop an analysis plan for each indicator selected to assess using the assessment
- Manage and clean data from all data collection sources
- Analyze qualitative and quantitative data collected to produce tables and figures

Phase 3: Data analysis and output development

- Produce dissemination material including standardized technical brief and/or report
- Generate and prioritize recommendations through discussion with steering committee
- Create an action plan with stakeholders and discuss the feasibility to address priority gaps
- Evaluate the assessment to validate results and inform further refinement of the toolkit*

Phase 4: Prioritization of recommendations and dissemination

*the desk review may begin in phase 1 to inform the protocol or concept note

** the expenditure tracking component of the evaluation plan should begin as soon as assessment activities start
The **Assessment Framework Tool** will indicate the most appropriate data collection method(s) required to assess each indicator. A surveillance assessment conducted using the toolkit has three methods of data collection: Desk review, Data Quality Assessment and a Survey.

<table>
<thead>
<tr>
<th>Data collection method</th>
<th>Desk level</th>
<th>Service-delivery level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk Review</td>
<td>Compile documents and data at the <strong>national level</strong> to review and describe surveillance system(s) using the <a href="#">Desk Review Guide</a>. Supplement with <strong>key informant interviews</strong> at national and subnational levels where appropriate.</td>
<td></td>
</tr>
<tr>
<td>Data Quality Assessment</td>
<td>Extract retrospective data from national surveillance system(s) and perform a DQA using the <a href="#">Data Quality Assessment desk level tool</a>.</td>
<td>Gather data from register books and reporting forms at facilities using the <a href="#">Data Quality Assessment service delivery tool</a>.</td>
</tr>
<tr>
<td>Survey</td>
<td></td>
<td>Customized the <a href="#">Question Bank</a> to create questionnaires for each unit/level to be surveyed.</td>
</tr>
</tbody>
</table>
1. Choose indicator from assessment framework tool

2. Indicator is selected in the Desk review guide and data is collected in a standardized Table

3. A set of associated questions are selected in the question bank to be asked at different levels of the health system as part of a questionnaire
### Summary national data quality estimates

<table>
<thead>
<tr>
<th>Metric Description</th>
<th>National level results</th>
<th>National level target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completeness of reports</td>
<td>95%</td>
<td>80%</td>
</tr>
<tr>
<td>Timeliness of reporting</td>
<td>86%</td>
<td>80%</td>
</tr>
<tr>
<td>Completeness of core variables within reports</td>
<td>84%</td>
<td>80%</td>
</tr>
<tr>
<td>Concordance between core variables</td>
<td>82%</td>
<td>80%</td>
</tr>
<tr>
<td>Concordance of key variables between two reporting systems</td>
<td>73%</td>
<td>80%</td>
</tr>
<tr>
<td>Consistency over time for core indicators</td>
<td>Consistent trend (Yes/No)</td>
<td></td>
</tr>
</tbody>
</table>

#### 1. Proportion of malaria outpatients
- Yes

#### 2. Proportion of malaria inpatients
- No

#### 3. Proportion of malaria inpatient deaths
- Yes

#### 4. Test positivity rate
- Yes

#### 5. Slide positivity rate
- Yes

#### 6. RDT positivity rate
- No

#### 7. Proportion of suspects tested
- Yes
To facilitate comparability between assessments over time and across geographies, a set of results expected from all assessments conducted using the Toolkit can be visualized in a dashboard including:

- Data quality plots
- A scorecard for each sub-objective (e.g. data use)
- A scorecard for each priority indicator

These outputs provide a high-level understanding of or first glance at the context, infrastructure, process, and technical and behavioural aspects that may be driving the surveillance system’s poor or good performance.

The in-depth findings from the malaria surveillance assessment can be presented in a Technical Brief (“2-pager) of key findings or a comprehensive Report, which includes a summary of the methods, a more in-depth description of the assessment results, and recommendations for surveillance strengthening actions based on key findings.
Upon completion of an assessment, recommendations should be developed based on the assessment results and prioritized in consultation with the NMP and other stakeholders based on their impact and feasibility for strengthening the surveillance system.

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Impact</th>
<th>Feasibility</th>
<th>Funding avail.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public Health</td>
<td>Cost Saving</td>
<td>Timelines</td>
</tr>
<tr>
<td>1. Implement surveillance staff training in Region x once every quarter to improve reporting rates</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>2. Implement supervision for surveillance staff in Region x and y once a month to improve data use</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
</tr>
<tr>
<td>3. Shorten data collection forms to ensure completeness of forms reported by community healthcare worker</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
<td>![Symbol]</td>
</tr>
</tbody>
</table>

Prioritized results from assessments should be disseminated to stakeholders and used to inform action planning during key strategic planning opportunities. Examples include:

- Delegating and costing activities to roll out a new information systems or revise surveillance guidelines during NSP formulation
- Using assessment recommendations to advocate for additional funding or resources (e.g. Global Fund grants)
- Track progress in malaria surveillance outputs and outcomes over time
The toolkit is currently being implemented in 5 countries

All comprehensive assessments

Need to identify countries to carry out the rapid assessment
A web-app will be developed to house the toolkit, as well as provide an interface for users to input assessment data and automate core outputs.

Features
- Interface in English and French
- User permissions
- Interactive web-app with automated tool content selection and outputs
- Maps showing completed assessments
- Dashboard with summary results

Early feedback on toolkit suggested poor navigation and user interface limited usability.

- Need for standardized, comparable, and automated display of core outputs.

**Project development cycle**
- Define concept
- Design and develop
- Implement
- Evaluate and iterate

**Approximate release dates**
- Q2 2021
- Q3 2021
- Q4 2021

**Malaria Surveillance Assessment Web-app Development - Scope of work**
1. Digitalization of the assessment toolkit and ability to download tools in their current format
2. Customization and download of data collection tools based on scope (indicators and strategies to be included)
3. Assessment result input/upload and dashboard generation
Other developments

DQA findings can be visualized using standardized dashboards, that can be programmed within WHO’s Malaria Module on DHIS2

Standardized visualizations for each level of the health system are provided within the WHO Malaria Module

Align WHO DQ documents and tools and update DQ app in DHIS2