

Malaria surveillance, monitoring and evaluation manual

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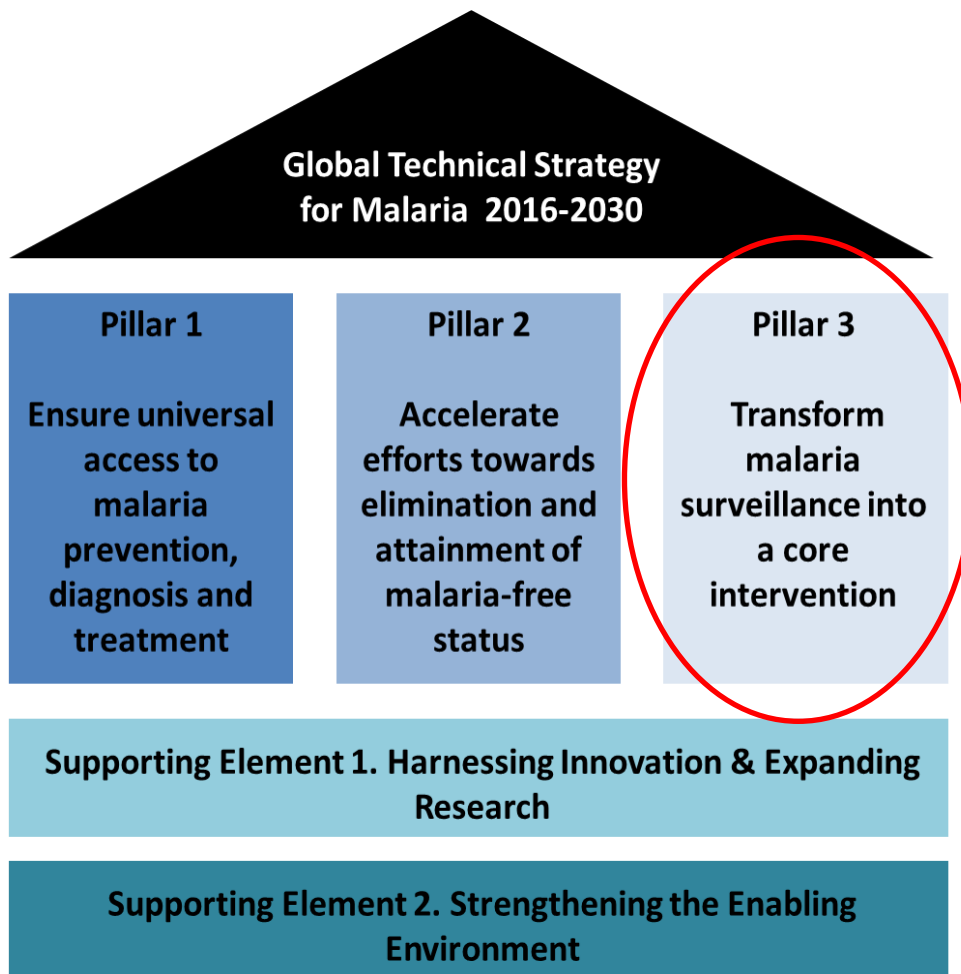


Malaria Policy Advisory Committee (MPAC) meeting
22-24 March 2017, Geneva, Switzerland

Global **Malaria** Programme



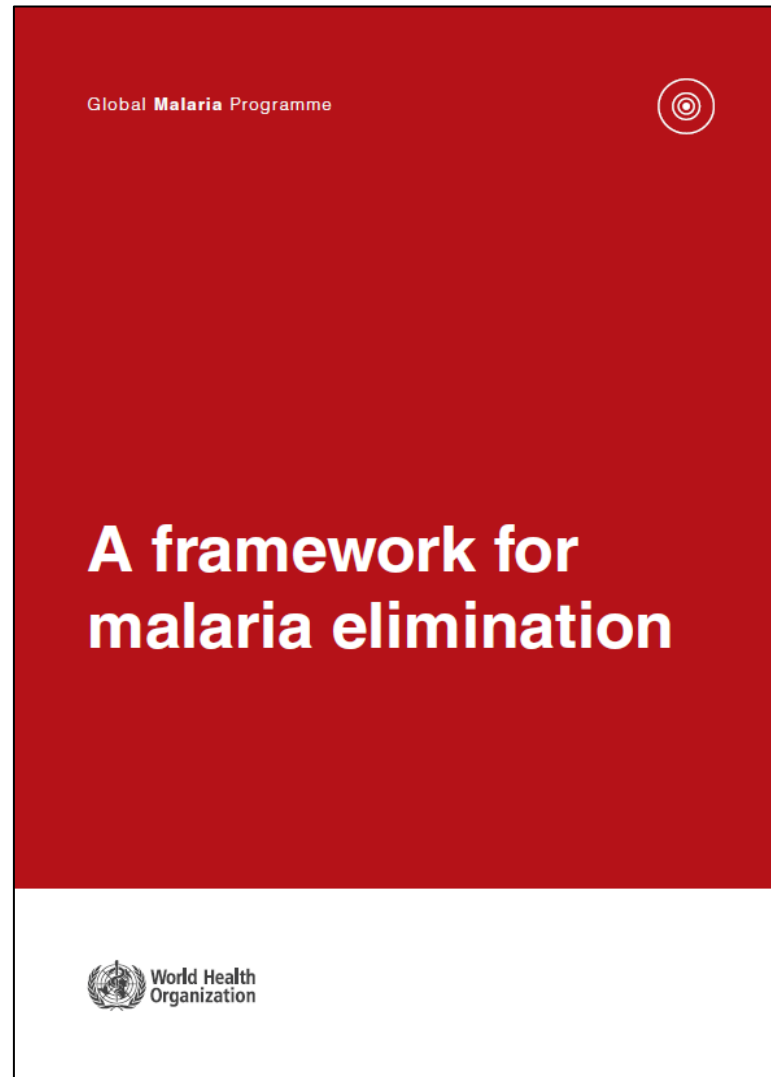
**World Health
Organization**



“Irrespective of where countries are on the path to elimination, surveillance of malaria should be upgraded to a core intervention in national and subnational malaria strategies.”

Global Technical Strategy for malaria 2016-2030

A framework for malaria elimination





Malaria
Surveillance,
Monitoring
and
Evaluation

An Operational
Manual

Draft 2, February 2017



1. Guidance from MPAC
2. Online approval in June or July 2017



- the 2012 Control and Elimination operation manuals are combined into one document
- the revised manual is aligned with both the GTS 2016-2030 and the Elimination Framework 2017
- the case and foci investigation forms will be automated and a section on foci mapping is included



- new sections on surveillance in the private and community health sectors and migrant and mobile populations
- monitoring and evaluation of:
 - national programmes
 - the GTS
 - surveillance systems

Chapter 1: Surveillance on the pathway to malaria elimination



Malaria surveillance across the continuum



Pillar 3 of the GTS 2016-2030

Transform Malaria
Surveillance into a
Core Intervention

| | High | Moderate | Low | Very Low | Zero | Maintaining Zero |
|-----------------------------------|--|-------------------------------------|---------------------------------------|--|-----------------|------------------|
| | ≥35% PR or ~450 per 1000 API | 10 – 35% PR or 250-450 per 1000 API | 1-10% PR or 100-250 per 1000 API | >0 but <1% PR or <100 per 1000 API | No transmission | |
| Case detection | Passive case detection | | | Passive + Active case detection | | |
| Recording | Outpatient and inpatient registers | | | Individual patient forms | | |
| Reporting frequency | Monthly | | Weekly | Real Time | | |
| Resolution of reported data | Aggregate case by age, sex | | Aggregate or line listing by age, sex | Case reports with case classification | | |
| Data use: health facility | Data analysed and displayed weekly | | | Data analysed and displayed in real time | | |
| Data use: intermediate levels | Data analysed and displayed monthly | | Data analysed and displayed weekly | | | |
| Data use: national | Data analysed and displayed monthly or quarterly | | Data analysed and displayed monthly | Data analysed and displayed weekly | | |
| Response time | Monthly | | Weekly | Case investigation within 48 hours, foci investigation within a week | | |
| Feedback frequency to lower level | Annually | Quarterly | Monthly | Every two weeks | | |
| Surveillance system monitoring | Annually | Quarterly | Monthly | Every two weeks | | |

Core principles of malaria surveillance



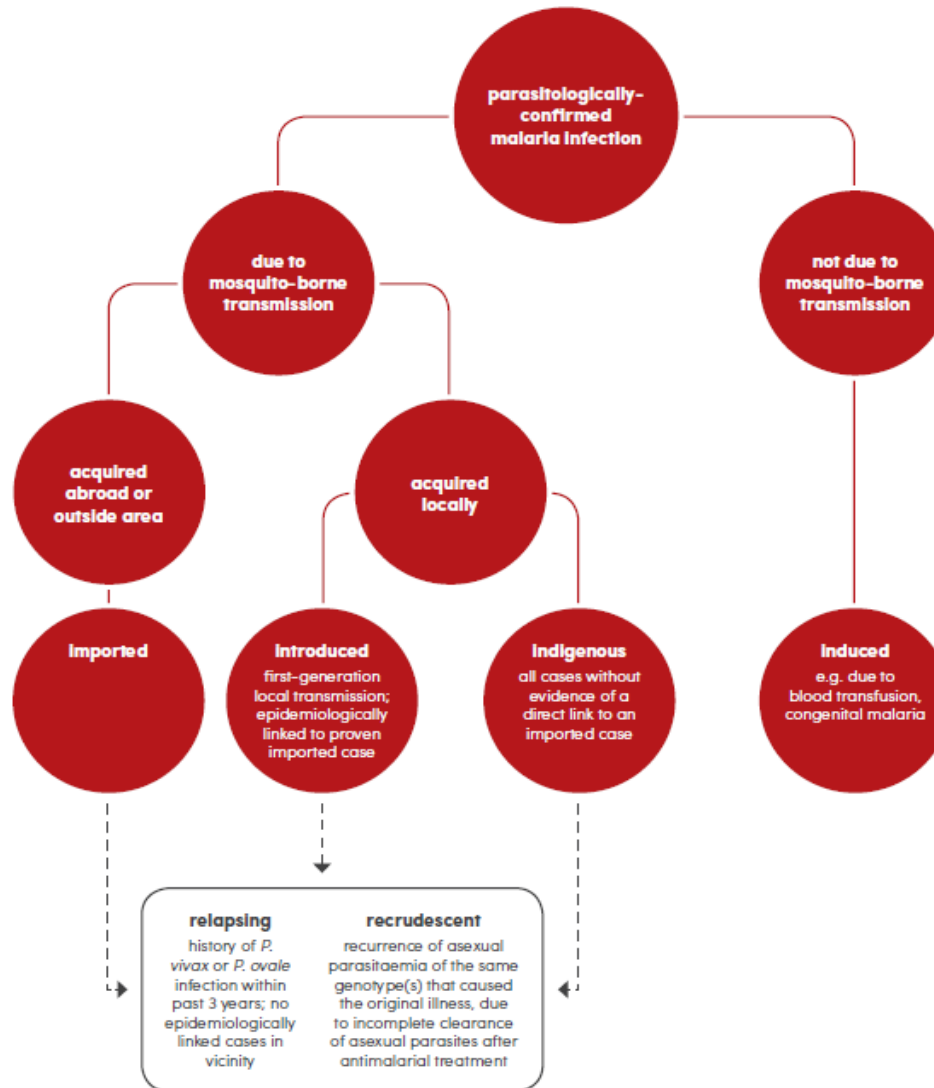
1. Integration of surveillance systems with HIS
2. Accurate diagnosis of malaria
3. Alignment of SoPs with WHO recommendation & regulation to make malaria notifiable
4. Stratified surveillance for heterogeneous epidemiology
5. Investments in surveillance prior to transition of epidemiology
6. Near real time reporting during elimination
7. Empowerment of frontline staff
8. Linking surveillance to response
9. Surveillance in all sectors (private, community, MMPs etc)
10. Continued efforts post elimination
11. Surveillance and innovation
12. Monitor the surveillance system's performance

Chapter 2: Concepts and practice of malaria surveillance systems

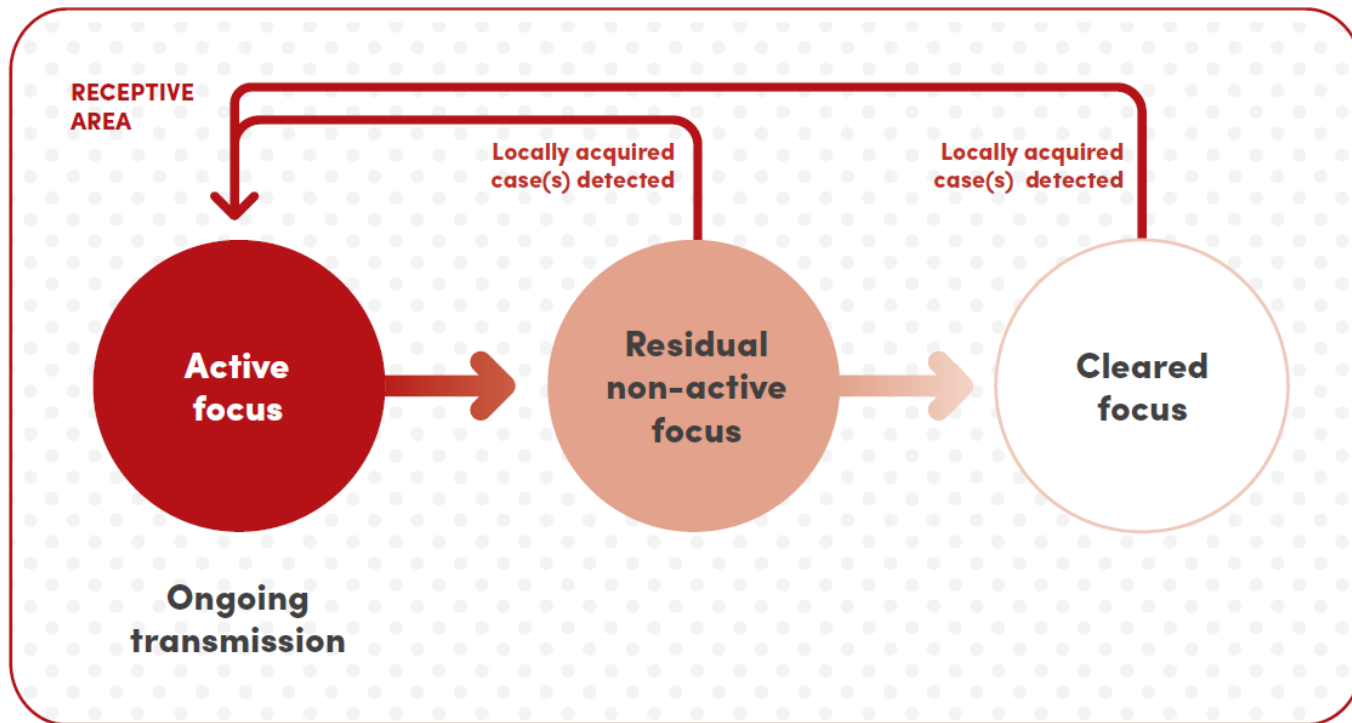


1. Case definitions
2. Case detection
3. Case investigation
4. Case classification
5. Foci investigation and mapping
6. Foci classification
7. Foci response

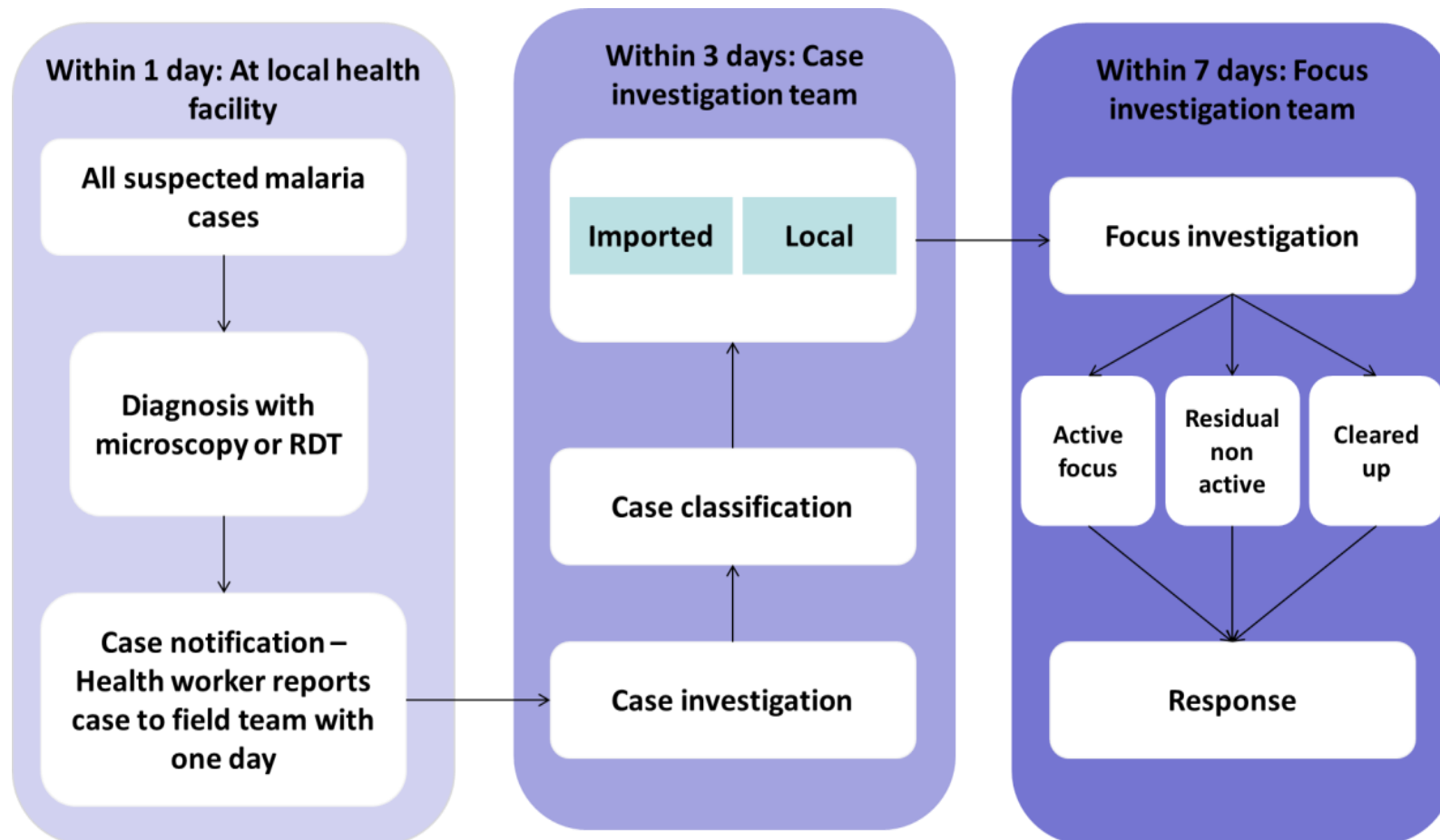
Case classification



Foci classification



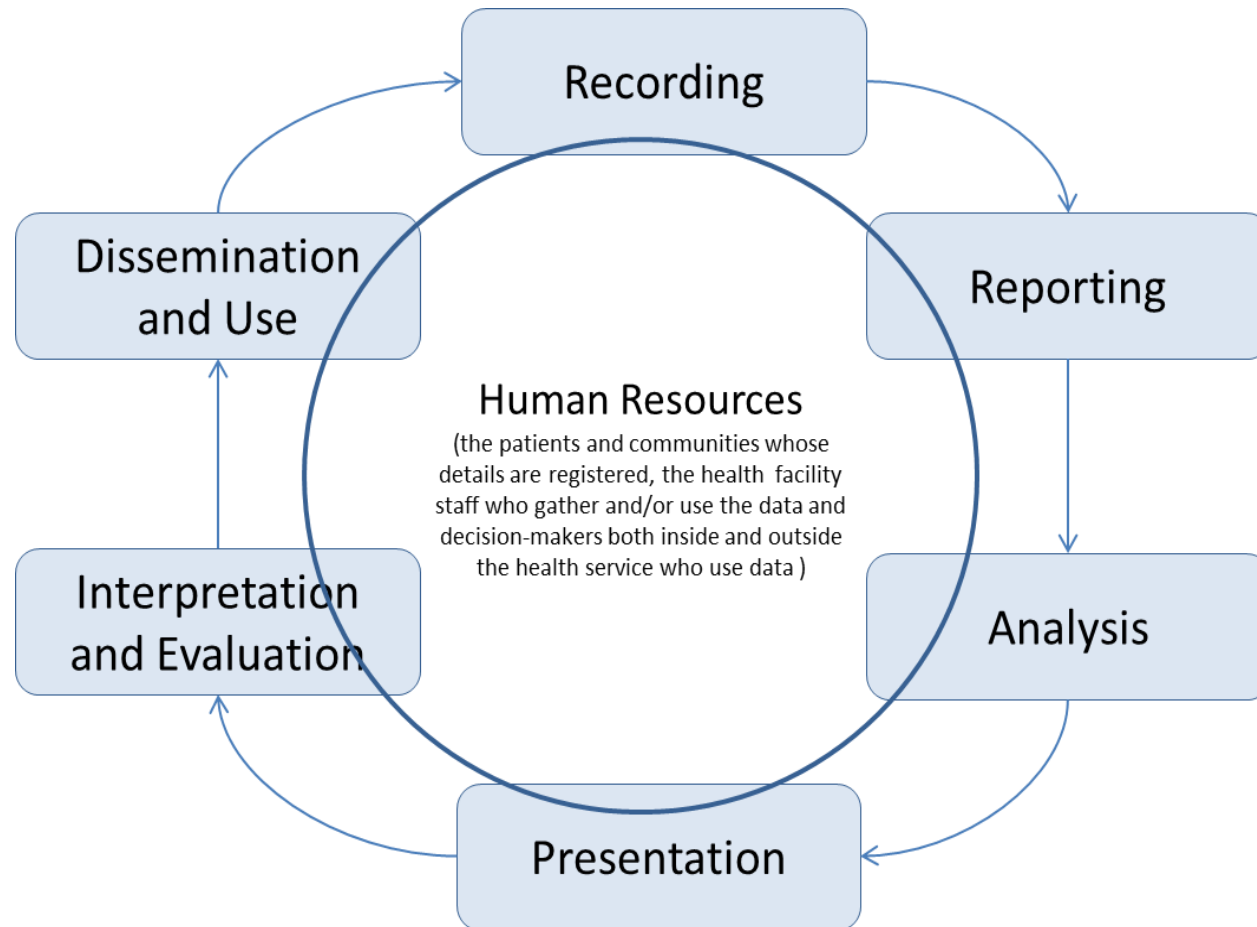
Active case detection process

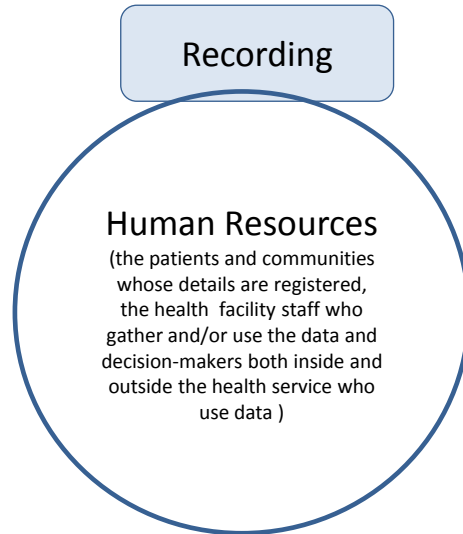




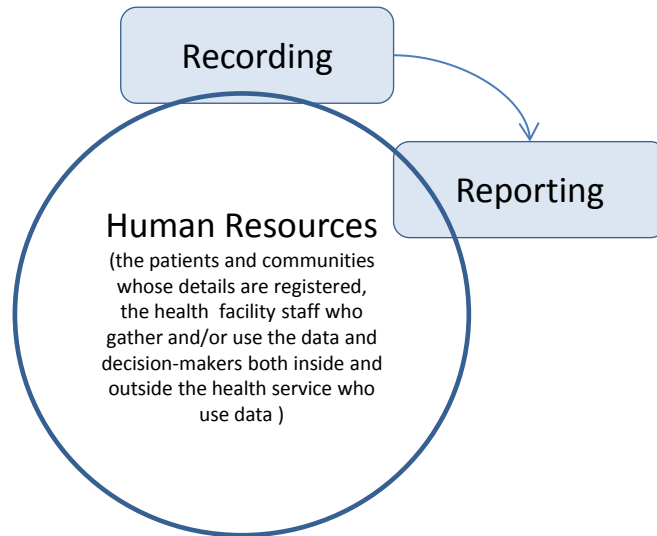
Chapter 3 Establishing surveillance systems

Health information cycle

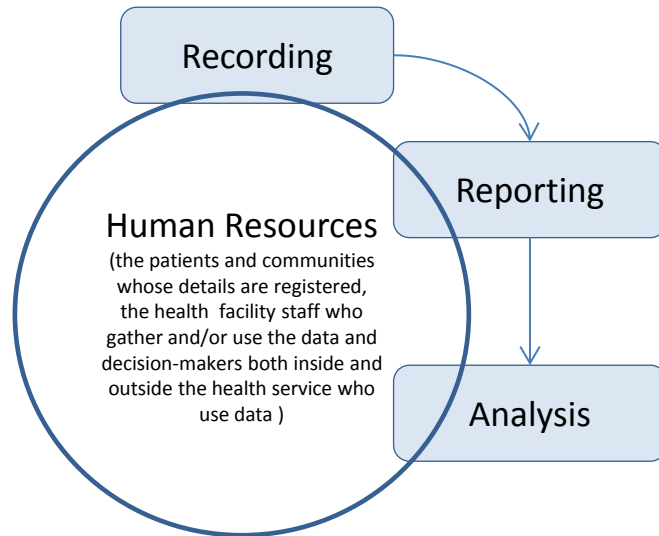




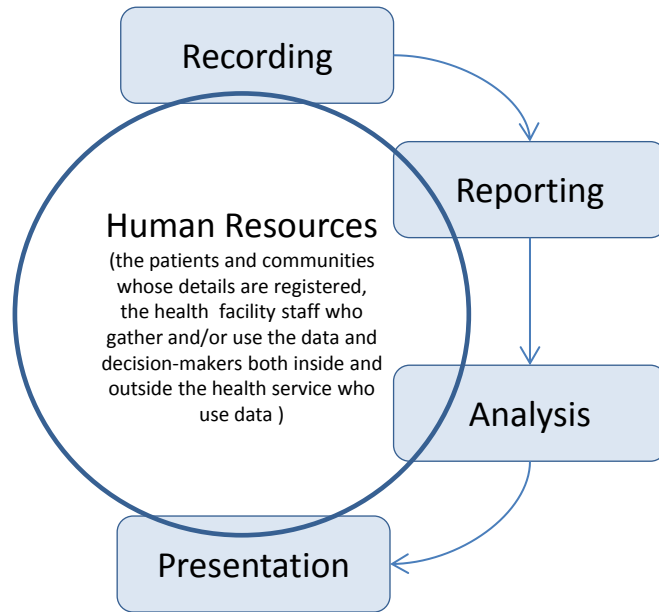
- clearly defined essential indicators
- diagnosis
- system for data recording - Patient and laboratory registers/forms/cards, tally sheets, pens, computers, databases software, printers
- training materials and SoPs



- data compilation
- data quality and completeness verification
- data transmission
- data archiving
- system manuals and SoPs

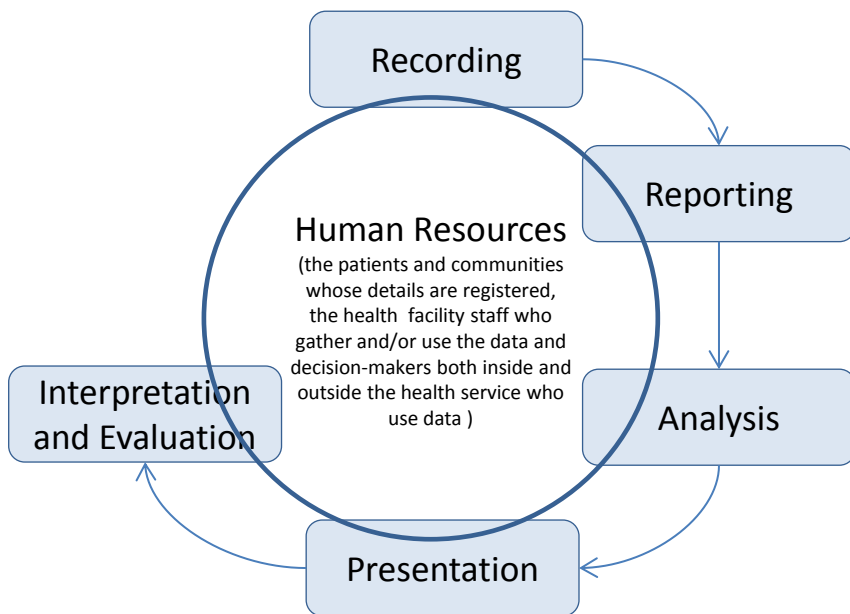


- relevant analytical skills and data quality checks
- hardware and software
- standard analytical plan and expected products – e.g. charts, surveillance bulletin etc.



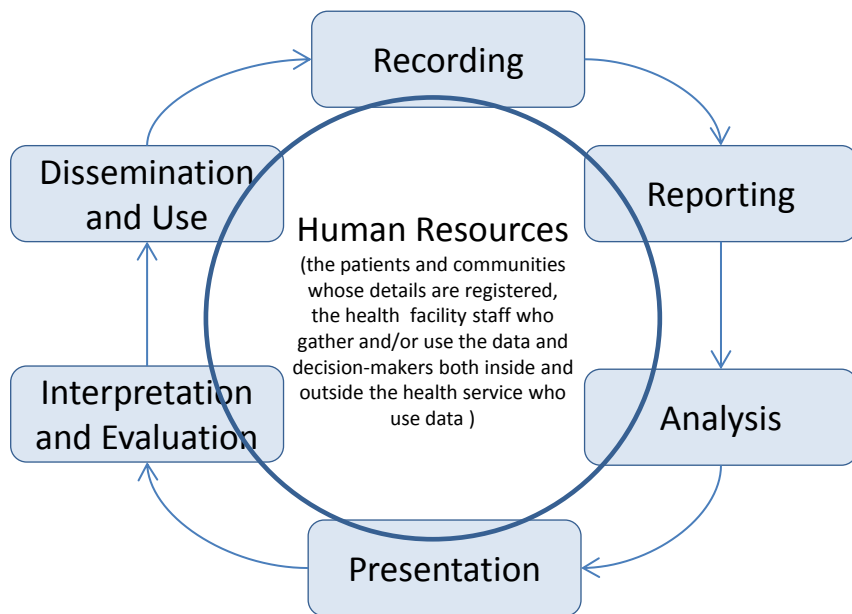
- hardware and software for data display
- agreed format for data presentation targeted different audiences
- communication – meetings etc

Health information cycle



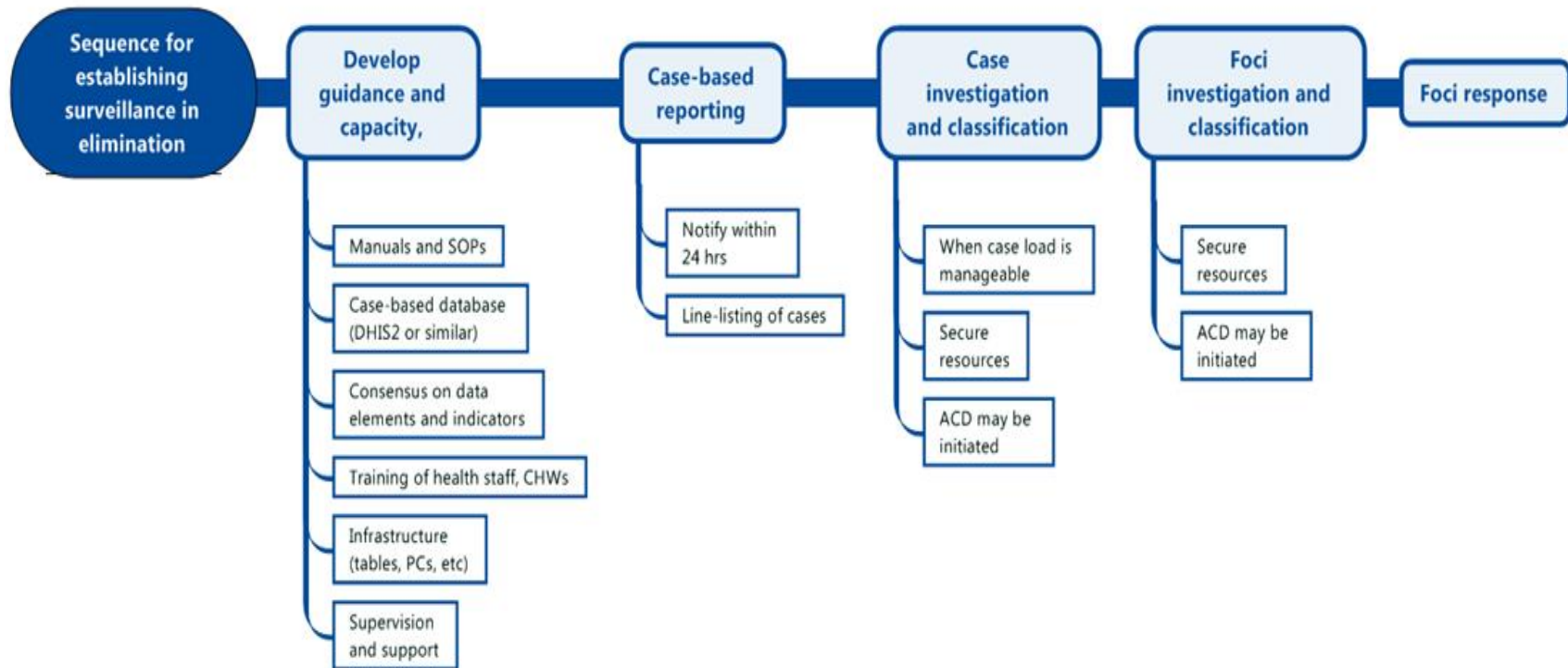
- completeness of data and reporting frequencies
- data quality checks
- system performance and bottlenecks
- performance of staff tasked with managing the system
- assessment of trends of key indicators

Health information cycle



- develop mechanisms of dissemination of data to stakeholders
- use data for decision making at country level
- use data for quantification and forecasting resource needs
- use data to respond to epidemics and other threats
- tracking progress towards elimination
- supervision and feedback

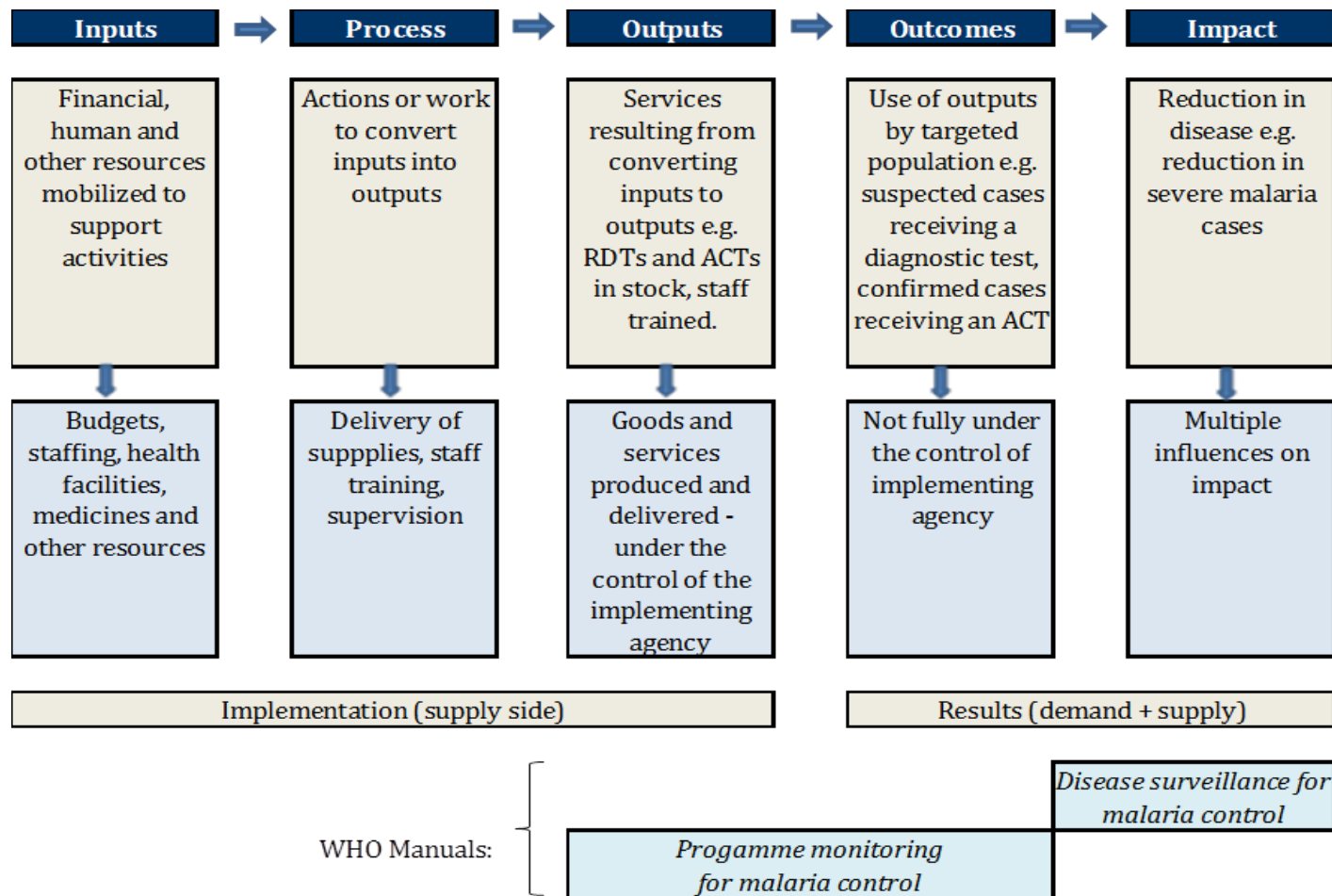
Surveillance for elimination



Chapter 4: Use of surveillance, surveys and other data for monitoring and evaluation of national programmes and the GTS



Monitoring and evaluation process



SME indicators



| | | Applicability of Indicator | | | | | | | | | Data source | | |
|----------------|--|----------------------------|------------------|---|--------------------|----------------------------|---------------|----------|--------------|---|-------------|---|---|
| | | Transmission intensity | | | Geography | | Level | | | | | | |
| | | High transmission | Low transmission | Elimination/ prevention of re-establishment | Sub-Saharan Africa | Outside sub-Saharan Africa | International | National | Sub-national | | | | |
| Indicator | Indicator | | | | | | | | | | | | |
| Inputs | | | | | | | | | | | | | |
| Financing | 1.1 Malaria expenditure per capita for malaria control and elimination | ● | ● | ● | | ● | ● | ● | ● | ● | | ● | |
| | 1.2 Funding for malaria relevant research | ● | ● | ● | | ● | ● | ○ | ○ | | | ● | |
| | 1.3 Number of top-10 registered corporations that invest in malaria | ● | | | | ● | ● | | ● | | | ● | |
| Outcome | | | | | | | | | | | | | |
| Vector control | 2.1 Proportion of population at risk sleeping under an insecticide-treated net (ITN) or living in house sprayed by IRS in the previous 12 months | ● | ○ | | | ● | ● | ● | ● | | | Ⓒ | Ⓒ |
| | 2.2 Proportion of population at risk that slept under an ITN the previous night | ● | ○ | | | ● | ● | ○ | ● | | | | ● |
| | 2.3 Proportion of population with access to an ITN within their household | ● | ○ | | | ● | ● | ○ | ● | | | | ● |
| | 2.4 Proportion of households with at least one ITN for every two people | ● | ○ | | | ● | ● | ○ | ● | | | | ● |
| | 2.5 Proportion of households with at least one ITN | ● | ○ | | | ● | ● | ○ | ● | | | | ● |
| | 2.6 Proportion of available ITNs used the previous night | ● | ○ | | | ● | ● | ○ | ● | | | | ● |
| | 2.7 Proportion of population at risk potentially covered by ITNs distributed | ● | ○ | | | ● | ● | | ● | ● | | ● | |
| | 2.8 Proportion of targeted risk group receiving ITNs | ● | ● | ● | | ● | ● | ○ | ● | ● | | ● | |
| | 2.9 Proportion of population at risk protected by indoor residual spraying | ● | ○ | | | ● | ● | ○ | ● | ● | | ● | |
| ✔ | 2.10 Proportion of targeted risk group receiving IRS | ● | ● | ● | | ● | ● | | ● | ● | | ● | |

● Indicator highly relevant to setting

○ Indicator potentially relevant to setting

Ⓢ Requires data from both routine systems and household survey

SME indicators



| | | Applicability of Indicator | | | | | | | Data source | | | |
|--------------------|--|----------------------------|------------------|---|--------------------|----------------------------|---------------|----------|-------------|---|---|--------------|
| | | Transmission intensity | | | Geography | | Level | | | | | |
| | | High transmission | Low transmission | Elimination/ prevention of re-establishment | Sub-Saharan Africa | Outside sub-Saharan Africa | International | National | | | | Sub-national |
| Indicator | Indicator | | | | | | | | | | | |
| Inputs | | | | | | | | | | | | |
| Chemoprevention | 3.1 Proportion of pregnant women who received ≥3 doses of intermittent preventive therapy (IPTp) | ● | | | | ● | | ● | ● | ● | ● | ● |
| | 3.2 Proportion of pregnant women who received 2 doses of IPTp | ● | | | | ● | | ○ | ● | ● | ● | ● |
| | 3.3 Proportion of pregnant women who received 1 dose of IPTp | ● | | | | ● | | ○ | ● | ● | ● | ● |
| | 3.4 Proportion of pregnant women who attended antenatal care (ANC) at least once | ● | | | | ● | | ○ | ● | ● | ● | ● |
| | 3.5 Proportion of children aged 3–59 months who received the full number of courses of SMC per transmission season | ● | | | | ● | | ● | ● | ● | ● | |
| Case detection | 4.1 Proportion of children under 5 with fever in the previous 2 weeks for whom advice or treatment was sought | ● | ○ | | | ● | ○ | ● | ● | | | ● |
| | 4.2 Proportion of detected cases contacting health services within 48 hours of developing symptoms | | | ● | | ● | ● | | ● | ● | ● | |
| Diagnostic testing | 5.1 Proportion of patients with suspected malaria who received a parasitological test | ● | ○ | | | ● | ● | ● | ● | ● | ● | ● |
| | 5.2 Proportion of children under 5 with fever in the previous 2 weeks who had a finger or heel stick | ● | | | | ● | ○ | ○ | ● | | | ● |
| | 5.3 Proportion of health facilities without stockouts of key commodities for diagnostic testing | ● | ○ | | | ● | ● | | ● | ● | ● | ● |
| Treatment | 6.1 Proportion of patients with confirmed malaria who received first-line antimalarial treatment according to national policy | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● |
| | 6.2 Proportion of treatments with ACTs (or other appropriate treatment according to national policy) among febrile children <5 | ● | ○ | | | ● | ○ | ○ | ● | | ● | ● |
| | 6.3 Proportion of <i>P. vivax</i> and <i>P. ovale</i> patients who received radical cure treatment | ● | ● | ● | | ○ | ● | ○ | ● | ● | ● | ● |
| | 6.4 Proportion of health facility months without stockouts of first-line treatments | ● | ○ | | | ● | ● | | ● | ● | ● | ● |



| | | | | | | | | | | | |
|-------------------------------|---|---|---|---|--|---|---|---|---|---|---|
| Surveillance | 7.1 Proportion of malaria cases detected by surveillance systems | ● | ● | ● | | ● | ● | ● | ● | © | © |
| | 7.2 Proportion of expected health facility reports received | ● | ● | ● | | ● | ● | ○ | ● | ● | ● |
| | 7.3 Annual blood examination rate | ● | ● | ● | | ● | ● | | ● | ● | ● |
| | 7.4 Proportion of cases investigated and classified | | | ● | | ● | ● | | ● | ● | ● |
| | 7.5 Proportion of foci investigated and classified | | | ● | | ● | ● | | ● | ● | ● |
| | 7.6 Percentage of case reports received <24 hours after detection | | | ● | | ● | ● | | ● | ● | ● |
| Impact | | | | | | | | | | | |
| Prevalence | 8.1 Parasite prevalence: proportion of population with evidence of infection with malaria parasites | ● | ○ | | | ● | ○ | | ● | ● | ● |
| Incidence | 9.1 Malaria case incidence: number of confirmed malaria cases per 1000 persons per year | ● | ● | ● | | ● | ● | | ● | ● | ● |
| | 9.2 Malaria admission rate: number of malaria admissions per 10 000 persons per year | ● | ○ | ○ | | ● | ● | | ● | ● | ● |
| | 9.3 Malaria test positivity rate | ● | ○ | | | ● | ● | | ● | ● | ● |
| | 9.4 Proportion of admissions due to malaria | ● | ○ | | | ● | ○ | | ● | ● | ● |
| | 9.5 Number of foci by classification | | | ● | | ● | ● | | ● | ● | ● |
| Mortality | 10.1 Malaria mortality rate: number of malaria deaths per 100 000 persons per year | ● | ○ | ○ | | ● | ● | | ● | ● | ● |
| | 10.2 Proportion of inpatient deaths due to malaria | ● | ○ | | | ● | ○ | | ● | ● | ● |
| Elimination | 11.1 Number of areas/ countries that have newly eliminated malaria since 2015 | | | ● | | ● | ● | | ● | ● | ● |
| Prevention of reestablishment | 12.1 Number of areas/ countries that were malaria-free in 2015 in which malaria has been re-established | | | ● | | ● | ● | | ● | ● | ● |

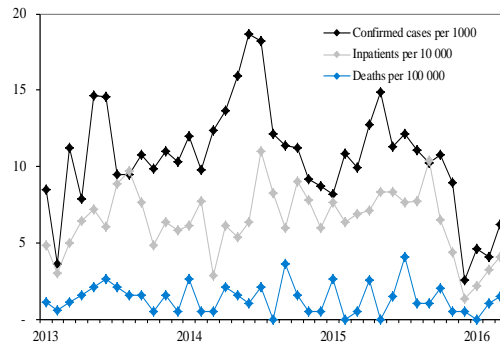
● Indicator highly relevant to setting

○ Indicator potentially relevant to setting

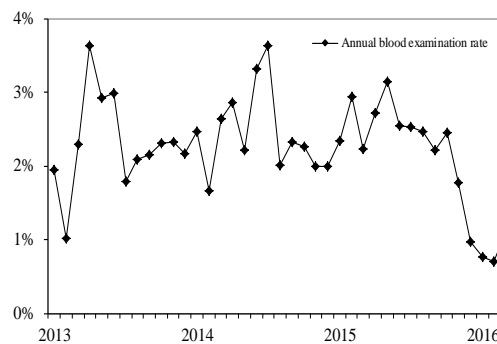
© Requires data from both routine systems and household survey



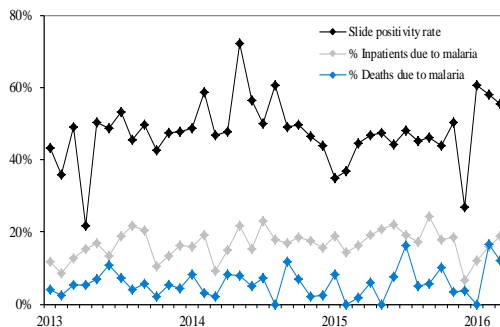
1. Malaria incidence rates



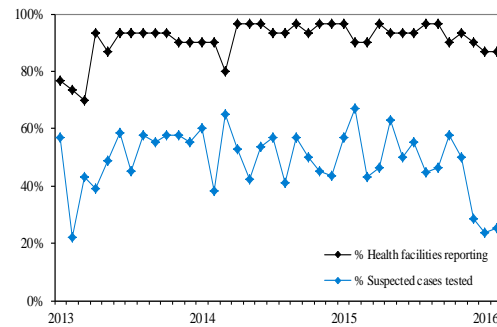
4. Diagnostic effort



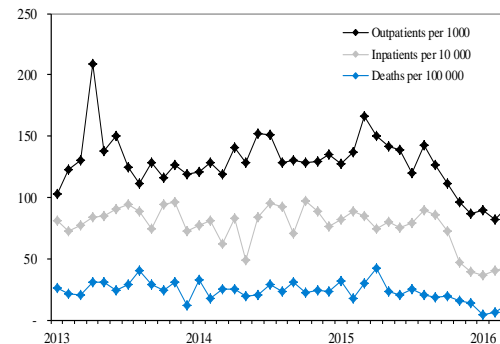
2. Proportional malaria incidence



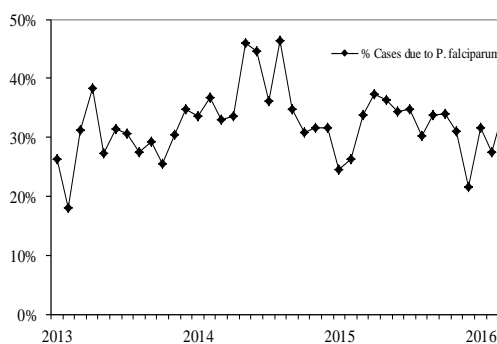
5. Quality of diagnosis and reporting



3. General patient attendance



6. % Cases due to *P. falciparum*





1. Surveillance of *Plasmodium vivax*
2. Entomological surveillance in burden reduction and elimination
3. Routine information systems high burden countries
4. Improved approaches to data use – electronic tutorials, forms, annexes
5. Mapped examples for foci mapping
6. Surveillance systems assessments - electronic check lists and a sample questionnaire
7. Accompanying DHIS 2 modules (burden reduction and elimination)
8. Expanded section on epidemics



| Name | Nationality |
|--------------------------------|-------------|
| 1. Adam Bennett | USA |
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SME Manual revision - process

