B50-54 *Malaria*

RATIONALE FOR SURVEILLANCE

Malaria is the most highly prevalent tropical disease, with high morbidity and mortality and high economic and social impact. The *Global Strategy for Malaria Control* is discussed in the 9GPW. Its 4 elements are:

1. Provision of early diagnosis and treatment.
2. Planning and implementing selective and sustainable preventive measures, including vector control.
3. Early detection, containment and prevention of epidemics.
4. Strengthening local capacities in basic and applied research to permit and promote the regular assessment of a country's malaria situation, in particular the ecological, social and economic determinants of the disease.

For this, surveillance is essential.

RECOMMENDED CASE DEFINITION

(For use in endemic areas and people exposed to malaria, e.g., a history of visit to endemic area). Malaria must be defined in association with clinical disease symptoms. The case definition for malaria cannot be uniform: it will vary according to how malaria is perceived in a given country, local patterns of transmission, and disease consequences. The suggested definitions are deliberately broad. Each national malaria control programme must adapt the definition and introduce additional indicators to make it more applicable to local epidemiology and control targets.

Clinical description

Signs and symptoms vary; most patients experience fever.

Splenomegaly and anaemia are commonly associated signs.

Common but non-specific symptoms include otherwise unexplained headache, back pain, chills, sweating, myalgia, nausea, vomiting.

Untreated *Plasmodium falciparum* infection can lead to coma, generalized convulsions, hyperparasitaemia, normocytic anaemia, disturbances of fluid, electrolyte, and acid-base balance, renal failure, hypoglycaemia, hyperpyrexia, haemoglobinuria, circulatory collapse / shock, spontaneous bleeding (disseminated intravascular coagulation), pulmonary oedema, and death.

Laboratory criteria for diagnosis

Demonstration of malaria parasites in blood films (mainly asexual forms).

Case classification

In areas without access to laboratory-based diagnosis.

Probable uncomplicated malaria: A person with symptoms and/or signs of malaria who receives anti-malarial treatment.

Probable severe malaria*:* A patient who requires hospitalization for symptoms and signs of severe malaria and receives anti-malarial treatment.

Probable malaria death*:* death of a patient diagnosed with probable severe malaria.

In areas with access to laboratory-based diagnosis.

Asymptomatic malaria: A person with no recent history of symptoms and/or signs of malaria who shows laboratory confirmation of parasitaemia.

Confirmed uncomplicated malaria*:* A patient with symptoms and/or signs of malaria who received anti-malarial treatment, with laboratory confirmation of diagnosis.

***Confirmed severe malaria**:* A patient who requires hospitalization for symptoms and/or signs of severe malaria and receives anti-malarial treatment, with laboratory confirmation of diagnosis.

***Confirmed malaria death**:* death of a patient diagnosed with probable severe malaria, with laboratory confirmation of diagnosis.

Some Health Services record malaria patients as "suspected malaria" until the microscopic diagnosis is available, after which the patient becomes "confirmed malaria". These services must take care to avoid double counting, and must record confirmed cases as a subset of suspected cases.

"Suspected malaria death" and "confirmed malaria death" are mutually exclusive categories.

Malaria treatment failure: A patient with uncomplicated malaria without any clear symptoms suggesting another concomitant disease who has taken a correct dosage of anti-malarial treatment, and who presents with clinical deterioration or recurrence of symptoms within 14 days of the start of treatment, in combination with parasitaemia (asexual forms).

RECOMMENDED TYPES OF SURVEILLANCE

- Routine monthly reporting of aggregated data of uncomplicated malaria, severe malaria, suspected and confirmed malaria deaths, treatment failures from peripheral level to intermediate and central level
- Surveys built into the supervision and retraining process. Topics include the availability and use of anti-malarial drugs. Every 3 months aggregated data are forwarded from the peripheral level to the intermediate and central levels
- Special surveys and "sentinel site" monitoring. Topics include drug utilization studies of malaria cases treated at home and in the private sector; assessment of therapeutic efficacy of anti-malarial drugs; estimating malaria-associated deaths in the community
- Timely recognition of malaria epidemic and notification at all times

Note: The primary purpose of surveillance is to guide malaria control activities at the level where data are collected. In addition, regularly completed forms provide an important numeric picture of trends in malaria incidence and mortality in the various units that diagnose and treat malaria.

RECOMMENDED MINIMUM DATA ELEMENTS

Note: According to epidemiological circumstances, different segments of the population may be affected by malaria. Knowledge of age group, sex and pregnancy status of patients constitutes vital information. All malaria data must be reported by age group (A) and sex (S), with a separate category for pregnant women (P).

Case-based data

***From peripheral level without microscopy*:**

- uncomplicated malaria: A / S / P
- severe malaria: A / S / P, referral (Y/N)
- suspected malaria death: A / S / P
- presumptive malaria treatment failure: A / S / P, nature of treatment taken

From peripheral level with laboratory facility:

same as peripheral level without microscopy **plus**

- type of malaria parasite (P. falciparum, P. malariae, P. ovale, P. vivax)

confirmed malaria death: A / S / P

Aggregated data for reporting

From peripheral level without laboratory facility:

- number of cases of uncomplicated malaria, severe malaria, malaria treatment failures(by treatment taken), for A / S / P
- suspected malaria mortality, by A / S / P

From peripheral level with laboratory facility:

same as peripheral level without microscopy **plus**

- type of malaria
- confirmed malaria mortality, by A / S / P

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Disease trends and patterns are the principal concern of malaria control programmes.

Reports: Monthly reports of aggregated data to the next level, by geographical area (district).

Graphs: Time trends for the different geographical areas; an increase in the number of cases of more than 2 standard deviations as compared to averaged data from previous "normal" years of transmission may indicate an epidemic.

Maps: Presence / absence of malaria cases; report completeness and timeliness.

Line list: Peripheral and intermediate levels that sent no monthly report or untimely reports.

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Identify high risk groups and problem areas (e.g., districts where therapeutic efficacy studies must urgently be carried out)
- Evaluate impact of control measures
- Adjust and target control measures
- Guide allocation of resources and training efforts

SPECIAL ASPECTS

Many cases may be treated at home or by private practitioners. It is a challenge for malaria control to incorporate home treatment and private practitioners in surveillance and control.

CONTACT

Regional Offices	AFRO	Fax 26 34 70 56 19	Tel. 26 34 70 74 39
	AMRO	Fax 1 202 974 36 63	Tel. 1 202 974 30 00
	EMRO	Fax 20 34 83 89 16	Tel. 20 34 82 02 23
	EURO	Fax 45 39 17 18 18	Tel 45 39 17 17 17
	SEARO	Fax 911 13 31 86 07	Tel. 911 13 31 78 04
	WPRO	Fax 63 25 21 10 36	Tel. 63 25 21 84 21

Headquarters: 20 Avenue Appia, CH-1211 Geneva 27, Switzerland
Communicable Diseases Prevention and Control (CPC)
E-mail: rietvelda@who.ch / Surveillancekit@who.ch
Tel: (41 22) 791 3753 / 2111 Fax: (41 22) 791 0746