

Annex 1. Defining the term “malaria case”

WHO update of malaria terminology
August 2015, Geneva, Switzerland

The most challenging issue of the terminology of malaria and malaria elimination centered on the definition of a “malaria case”. Within the expert group, there was much discussion but no unanimous agreement.

A1.1 Background

A1.1.1 Definitions for “case”

General medical dictionaries

A general definition for “case” is as follows:

Case. A particular instance of disease; sometimes used incorrectly to designate the patient with the disease (from Dorland's Illustrated Medical Dictionary (1) – general definition)

Malaria control programmes typically report “malaria cases” as the number of people presenting with illness who are diagnosed as having malaria infection – consistent with the above definition of an instance of illness or disease linked to infection. With the transition of a programme to elimination, an emphasis is placed on malaria infections that may remain asymptomatic for prolonged periods yet lead to ongoing transmission in the community. Based on this emphasis, in the elimination phase there is an evolution of the term “malaria case”, which is then applied to both symptomatic and asymptomatic infections.

WHO terminology

In 1963, the publication WHO terminology for malaria and malaria eradication (2) provided the following definitions for case and malaria case:

Case. An occurrence or instance of infection or disease. The word is so vague that the type of case should always be specified, as, for instance, a malaria case or a fever case. (2)

Malaria case. In malaria eradication terminology, occurrence of malaria infection in a person in whom, regardless of the presence or absence of clinical symptoms, the presence of malaria parasites in the blood has been confirmed by microscopic examination. During surveillance, every malaria case detected is classified, according to the origin of the infection, as indigenous or as imported, introduced, relapsing or induced. (2)

This terminology was consistent with the idea that, as a country moves into a malaria elimination phase, the programme will reorient its strategies, including surveillance case definitions. In many countries where the national malaria control programme is investing to improve “control”, the surveillance system is tracking malaria cases as those presenting with illness to health workers. In countries with very low transmission, by contrast, the surveillance system is tracking all infections, both symptomatic and asymptomatic.

A1.1.2 Definitions of case and infection are linked

The definitions of a case and an infection are linked, as shown by these definitions:

Infection. Invasion and multiplication of microorganisms in body tissues, resulting in local cellular injury due to competitive metabolism, toxins, intracellular replication, or antigen-antibody response. (Dorland’s Medical Dictionary (1) – general definition)

Infection. Entrance, establishment or maintenance in a host of a parasite, generally involving its multiplication; also the resulting condition in the host. (2)

Thus, according to WHO (2) “malaria case” was essentially equivalent to “malaria infection”.

A1.1.3 Parasitological confirmation of all suspected malaria cases

With the recent progress regarding the emphasis on parasitological confirmation of malaria when an individual presents with illness that is suspected to be malaria, WHO recommends that all “cases” should be confirmed with available diagnostic tools.

A1.2 External survey

Given that there was no unanimous agreement on the definition and on the proposal to modify the case definition for the transition from control to elimination, the WHO Drafting Committee on Malaria Terminology decided to put two options to a wider audience to obtain input and comment. The text put to the external survey was as follows:

Choose the best definition for “malaria case”:

Definition #1: Occurrence of malaria illness/disease in a person in whom the presence of malaria parasites in the blood has been confirmed by parasitological testing.

Note: A malaria case can be classified as suspected, presumed, confirmed, and as autochthonous, indigenous, induced, introduced, imported (based on the origin of infection), and relapsing.

Definition #2: Occurrence of malaria infection (symptomatic or asymptomatic) in a person in whom the presence of parasites in the blood has been confirmed by parasitological testing.

Note: A malaria case can be classified as autochthonous, indigenous, induced, introduced, imported (based on the origin of infection), and relapsing.

The external feedback received by 11 groups of reviewers is summarized in the table below:

	Prefer definition #1	Prefer definition #2
Yes	7	3
Uncertain	2	4
No	2	3

The responses from the external reviewers suggest that there is not unanimity; however, 7 of 11 respondents (64%) preferred definition #1 while only 3 out of 10 (33%) preferred definition #2.

Among the reviewers preferring definition #1, the comments included:

- Either definition ought to specify “... the presence of asexual malaria parasites in the blood ...”
- The second definition is for the term “malaria infection”.
- A malaria case can be classified as autochthonous, indigenous, induced, introduced, imported (based on the origin of infection), relapsing.
- I don't see any problem in a different definition at different programme phases (responded yes to both #1 and #2).
- The application of “case, malaria” referencing asymptomatic infection has been, and will always be confusing to national programmes, unless there is certified knowledge of non-infection state of the individual, prior to determination of the asymptomatic condition. Perhaps there is need to consider separate and clarified definition of “case, infection” and “case, illness”.

Among the reviewers preferring definition #2, the comments included:

- Let's just simplify our lives and say that malaria infection is what we're interested in finding, curing, eliminating.
- This is the case definition in the surveillance guidelines. A country should report all cases of malaria found whether they are found by passive case detection or active.

Among the reviewers indicating that they were “uncertain”, the comments included:

- Need to distinguish between parasitological and clinical cases. Need specific definitions. Please can we get rid of the word “autochthonous” and use “locally transmitted” instead.
- Both definitions have issues. I prefer definition #1 but based purely on confirmation. Suspected and presumed should be out.

A1.3 Review by drafting committee

After the completion of the survey and the compilation of the survey results, the drafting committee again reviewed the malaria case definitions, providing the following comments.

Five members of the committee expressed a preference for definition #2, based on the following points:

- Advantage of continuity, in using a case definition in line with the definition of the past.
- Definition needed for surveillance purposes.
- Not all infections are cases (e.g. hypnozoite carriers are infected, but are not cases).
- Best if exchangeable with the term infection.
- To reduce confusion, all malaria data sets should include malaria case definition.
- Terminology in line with action required for malaria elimination.

- Already adopted and in large use in malaria elimination programmes, including related terms (e.g. “case investigation”, “index case”, “case follow-up”).
- In line with requirement that countries should report as “malaria cases” only laboratory confirmed cases.

Two members of the committee expressed a preference for changing definitions #1 and #2, in the different phases of malaria control and elimination:

- While parasitological confirmation of is now recommended in all suspected malaria cases, for surveillance it only really becomes absolutely mandatory in elimination settings.
- It makes sense for surveillance to evolve as part of the reorientation of interventions from control to elimination.
- Case definitions for surveillance can change based on the operational setting.

A1.4 Requested advice from MPAC

Changing the definition of “malaria case” has important implications for malaria surveillance. In addition, numerous terms are linked to this definition – either using “case” or “infection”—including the following:

- suspected case,
- presumed case,
- case detection (passive, active),
- infection detection (active),
- case investigation,
- index case,
- secondary cases/infections,
- case follow-up,
- imported case/infection,
- induced case/infection,
- introduced case/infection

Given the challenges with this important set of terms (“case” and “infection”), we would like to ask the MPAC for inputs and recommendations to WHO on the most useful and appropriate definition.

A1.5 References

- 1 Dorland's Illustrated Medical Dictionary. Philadelphia, Elsevier Saunders. 2012.
- 2 WHO. Terminology of malaria and of malaria eradication. Geneva, World Health Organization (WHO). 1963
(https://extranet.who.int/iris/restricted/bitstream/10665/39007/1/9241540141_eng.pdf).