

Malaria (*Plasmodium spp.*)

2010 CDC Case Definition

Clinical description

The first symptoms of malaria (most often fever, chills, sweats, headaches, muscle pains, nausea and vomiting) are often not specific and are also found in other diseases (such as influenza and other common viral infections). Likewise, the physical findings are often not specific (elevated temperature, perspiration, tiredness). In severe malaria (caused by *P. falciparum*), clinical findings (confusion, coma, neurologic focal signs, severe anemia, respiratory difficulties) are more striking and may increase the suspicion index for malaria.

Laboratory criteria for diagnosis:

- Detection of circulating malaria-specific antigens using rapid diagnostic test (RDT), OR
- Detection of species specific parasite DNA in a sample of peripheral blood using a Polymerase Chain Reaction test*, OR
- Detection of malaria parasites in thick or thin peripheral blood films.

Case classification

Suspected:

- Detection of *Plasmodium* species by rapid diagnostic antigen testing without confirmation by microscopy or nucleic acid testing in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

Confirmed:

- Detection and specific identification of malaria parasites by microscopy on blood films in a laboratory with appropriate expertise in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country, OR
- Detection of *Plasmodium* species by nucleic acid test * in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

Comment

*Laboratory-developed malaria PCR tests must fulfill CLIA requirements, including validation studies

- A subsequent attack experienced by the same person but caused by a different *Plasmodium* species is counted as an additional case. A subsequent attack experienced by the same person and caused by the same species in the United States may indicate a relapsing infection or treatment failure caused by drug resistance or a separate attack.

- Blood smears from questionable cases should be referred to the CDC Division of Parasitic Diseases Diagnostic Laboratory for confirmation of the diagnosis.
- Cases also are classified according to the following World Health Organization categories:
 - *Autochthonous*:
 - *Indigenous*: malaria acquired by mosquito transmission in an area where malaria is a regular occurrence
 - *Introduced*: malaria acquired by mosquito transmission from an imported case in an area where malaria is not a regular occurrence
 - *Imported*: malaria acquired outside a specific area (e.g., the United States and its territories)
 - *Induced*: malaria acquired through artificial means (e.g., blood transfusion, common syringes, or malariotherapy)
 - *Relapsing*: renewed manifestation (i.e., of clinical symptoms and/or parasitemia) of malarial infection that is separated from previous manifestations of the same infection by an interval greater than any interval resulting from the normal periodicity of the paroxysms
 - *Cryptic*: an isolated case of malaria that cannot be epidemiologically linked to additional cases