

Malaria (*Plasmodium* spp.)

2014 Case Definition

Recommend on Facebook Tweet



- [Twitter](#) [Facebook](#) [LinkedIn](#) [Email](#) [Digg](#)[Add this to your site](#)

CSTE Position Statement(s)

- 13-ID-08

Background

Malaria is a mosquito-borne disease caused by a parasite; intraerythrocytic protozoa of the genus *Plasmodium* (e.g., *P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae* among other species). The first two species cause the most infections worldwide. *P. falciparum* is the agent that most commonly causes severe and potentially fatal malaria. *P. vivax* and *P. ovale* may have dormant liver stage parasites, which can reactivate and cause malaria several months or years after the infecting mosquito bite. *P. malariae* can result in long-lasting infections and if untreated can persist asymptotically in the human host for years, even a lifetime. About 1600 cases of malaria are reported each year in the United States, most of which are imported, i.e., acquired in malaria-endemic countries.

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 (PCR) test. (Note: Laboratory-developed malaria PCR tests must fulfill Clinical Laboratory Improvement Amendments [CLIA] requirements, including validation studies)

OR

- Detection of malaria parasites in thick or thin peripheral blood films, determining the species by morphologic criteria, and calculating the percentage of red blood cells infected by asexual malaria parasites (parasitemia).

Criteria to Distinguish a New Case from an Existing Case

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.

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 parasite species 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.

OR

- Detection of unspiciated malaria parasite 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.

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

Case Classification Comments

Clinical samples including Blood smears or EDTA whole blood from all cases can be referred to the CDC Division of Parasitic Diseases and Malaria Diagnostic Laboratory for confirmation of the diagnosis and antimalarial drug resistance testing. Any questionable cases should be referred to the CDC Division of Parasitic Diseases and Malaria Diagnostic Laboratory for confirmation of the diagnosis.

Comments

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*: Recurrence of disease after it has been apparently cured. In malaria, true relapses are caused by reactivation of dormant liver-stage parasites (hypnozoites) of *P. vivax* and *P. ovale*.
- *Cryptic*: an isolated case of malaria that cannot be epidemiologically linked to additional cases.