

**Malaria v1**  
**Definition Factsheet & Technical Brief**

**Authors:** Andzelika Rzucidlo, MPH<sup>1,2</sup>, Dylan Johns, MS<sup>1,3</sup>, Lakshmi Radhakrishnan, MPH<sup>1</sup>, Anna Frick, MPH<sup>4</sup>, Sara Chronister, MPH<sup>5</sup>, David Atrubin<sup>6</sup>, Katharina L. van Santen, MSPH<sup>1,3</sup>

<sup>1</sup> CDC Office of Public Health Data, Surveillance, and Technology (OPHDST), Immediate Office of the Director (IOD), Integrated Monitoring Branch

<sup>2</sup> InductiveHealth

<sup>3</sup> ICF

<sup>4</sup> Alaska Division of Public Health

<sup>5</sup> Washington State Department of Health

<sup>6</sup> Florida Department of Health

**Point of contact:**

nssp@cdc.gov

**Definition Purpose:** Created by the CDC National Syndromic Surveillance Program (NSSP) for use with ED data as part of the rapid reportables project, which seeks to create queries for all National Notifiable Diseases defined by the National Notifiable Diseases Surveillance System (NNDSS). This query is intended to be a version 1 and may be further improved upon by the NSSP community of practice in the future. This query is intended to be narrow and capture visits with specific terms to support greater monitoring and actionable public health data. More complex and/or broader queries may exist that more broadly capture symptoms or travel-based terms.

**New or Revised Definition:** New Definition

**Date Added to ESSENCE:** July 2024

**Definition Description:** Designed to capture emergency department visits associated with malaria infection.

**Use-Cases for Definition:**

- Case-finding
- Trend monitoring
- Early outbreak detection

**Justification:** No query definition exists for malaria infections. CDC wants to use syndromic data to monitor trends.

**Data Source During Development:** Emergency Department Visits. Chief Complaint Query Validation dataset (CCQV) in ESSENCE.

**Development Methods:**

1. The CDC team used the NNDSS case definition of malaria Infections to identify diagnostic codes (International Classification of Diseases, 9th & 10th Revisions (ICD-9-CM, ICD-10-CM), SNOMED Clinical Terms (CT)) and chief complaint free text for syndrome development.
2. The codes and free text were then categorized as inclusion or exclusion terms. These terms were formatted for querying in ESSENCE.
3. Text analysis was conducted on the initial query to find additional inclusion or exclusion terms.
4. The query was cross-checked internally by NSSP and by CDC subject matter experts as needed.

Validation Methods: This definition is part of the collection of definitions created by CDC NSSP for the rapid reportables project. The rapid reportables project is led by the CDC NSSP team to create definitions for all nationally reportable diseases. These definitions focus on chief complaint text and diagnostic codes of the disease or its causative agents with no mention of symptoms. Select members of the community of practice were then asked to review line-level results for their jurisdictions and provide feedback to ensure the intended results of the definitions were met.

Definition Fields and Structure:

The Chief Complaint Discharge Diagnosis (CCDD) parsed field is used to query both the discharge diagnosis codes and chief complaint free text.

- Inclusion based on malaria-related chief complaint free-text terms:
  - The visit is included if it contains:
    1. Chief complaints related to the pathogen name – (“malaria”, “*Plasmodium*”) **OR**
- Inclusion based on ICD-10 discharge diagnosis codes related to malaria:
  - The visit is included if it contains:
    1. A discharge diagnosis code of *Plasmodium falciparum* malaria (B50) **OR**
    2. A discharge diagnosis code of *Plasmodium vivax* malaria (B51) **OR**
    3. A discharge diagnosis code of *Plasmodium malariae* malaria with nephropathy (B52) **OR**
    4. A discharge diagnosis code of *Plasmodium ovale* malaria (B53) **OR**
    5. A discharge diagnosis code of Unspecified malaria (B54) **OR**
- Inclusion based on SNOMED discharge diagnosis codes related to malaria:
  - The visit is included if it contains:
    1. A discharge diagnosis code of Malaria (61462000) **OR**
    2. A discharge diagnosis code of *Plasmodium ovale* malaria (19341001) **OR**
    3. A discharge diagnosis code of *Plasmodium vivax* malaria (27052006) **OR**
    4. A discharge diagnosis code of *Plasmodium falciparum* malaria (62676009) **OR**
    5. A discharge diagnosis code of Quartan malaria (27618009) **OR**
    6. A discharge diagnosis code of *Plasmodium malariae* malaria with nephropathy (186796004) **OR**
    7. A discharge diagnosis code of *Plasmodium vivax* malaria with rupture of spleen (186792002) **OR**
    8. A discharge diagnosis code of Disorder of glomerulus caused by *Plasmodium malariae* (1260350001) **OR**
    9. A discharge diagnosis code of Malaria caused by *Plasmodium* not *Plasmodium falciparum* (722888000) **OR**
    10. A discharge diagnosis code of *Plasmodium falciparum* malaria with cerebral complications (186791009)
- No exclusion terms or codes are used in this query.

Detailed Definition Components

**Table 1.** Inclusion and exclusion terms.

Variable Type	Terms	Description
<b>Inclusions</b>		
Discharge Diagnosis: ICD-10-CM	B50	<i>Plasmodium falciparum</i> malaria
	B51	<i>Plasmodium vivax</i> malaria
	B52	<i>Plasmodium malariae</i> malaria with nephropathy
	B53	<i>Plasmodium ovale</i> malaria
	B54	Unspecified malaria
Discharge Diagnosis: SNOMED concepts	61462000	Malaria
	19341001	<i>Plasmodium ovale</i> malaria
	27052006	<i>Plasmodium vivax</i> malaria
	62676009	<i>Plasmodium falciparum</i> malaria
	27618009	Quartan malaria
	186796004	<i>Plasmodium malariae</i> malaria with nephropathy
	186792002	<i>Plasmodium vivax</i> malaria with rupture of spleen
	1260350001	Disorder of glomerulus caused by <i>Plasmodium malariae</i>
	722888000	Malaria caused by <i>Plasmodium</i> not <i>Plasmodium falciparum</i>
186791009	<i>Plasmodium falciparum</i> malaria with cerebral complications	
Chief Complaint Terms	malaria	
	<i>Plasmodium</i>	

**Table 2.** ESSENCE syntax

<code>^;B5[0-4]^,or,^;61462000;^,or,^;19341001;^,or,^;27052006;^,or,^;62676009;^,or,^;27618009;^,or,^;186796004;^,or,^;186792002;^,or,^;1260350001;^,or,^;722888000;^,or,^;186791009;^,or,^malaria^,or,^plasmodium^</code>
--