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# Status of Malaria in the W.H.O. Region of the Americas

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**Abstract:** Malaria is still one of the major public health problems which is reemerging in Americas due to its vast forest area and tourism. The objective of this paper is to present a birds-eye view of the Malaria situation in the W.H.O. Region of the Americas. The methods included online searches related to Malaria for each country such as from the W.H.O., the Centers for Disease Control and Prevention, USA (CDC), the National Health Service, UK (NHS) and journal articles as well as national program documents. The W.H.O. Region of the Americas consists of forty-nine countries. Despite the stringent efforts to eliminate Malaria cases, only twelve countries were given Malaria free certificates by W.H.O. Most of the countries of the Americas were able to eliminate Malaria more than half a century ago and in a large part this was due to advances in improving sanitation so that breeding places for the mosquitoes ceased to exist. Thirty-one countries are free of indigenous Malaria while the remaining eighteen are progressing towards that target. Therefore, it is seen that many countries in the Region of the Americas are yet to receive certification of Malaria elimination. Close coordination and collaboration between the public health departments and stakeholders is required to eliminate Malaria in the Americas.

**Keywords:** Malaria, World Health Organization, *Plasmodium*

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## 1. Introduction

The W.H.O. Region of the Americas consists of the following forty-nine countries: Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, British Virgin Islands, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Cuba, Curacao, Dominica, Dominican Republic, Ecuador, El Salvador, French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Suriname, Trinidad and Tobago, Turks and Caicos, United States of America, Uruguay and Venezuela.

So far, no study has been carried out to find out the status of Malaria in the W.H.O. Region of the Americas.

The Pan American Health Organization (P.A.H.O.) is the name given to the W.H.O. Office for the Americas. It is responsible for coordinating the work of the W.H.O. in the countries of the Region by providing technical advice and help related to both communicable and non-communicable diseases.

Malaria is an important communicable disease which is looked after by P.A.H.O. and the organization has brought out several technical documents on the subject [5, 20].

The objective of this paper is to present a birds-eye view of the Malaria situation in the W.H.O. Region of the Americas.



*Figure 1. Map of W.H.O.'s Region of the Americas [Source: (1)].*

## 2. Methods

The study design included online searches related to Malaria for each country such as from the W.H.O., CDC, NHS, and journal articles as well as national program documents.

### 3. Results

#### 1) Anguilla

There is no Malaria transmission in Anguilla. [2]

**Table 1.** Countries That Have Been Certified by the W.H.O. to Be Free from Malaria [3].

S. No.	Country	Year in which Certified
1.	Antigua and Barbuda	2012
2.	Argentina	2019
3.	Bahamas	2012
4.	Barbados	1968
5.	Canada	1965
6.	Chile	1968
7.	Cuba	1973
8.	Dominica	1966
9.	Saint Kitts and Nevis	2012
10.	Saint Vincent and the Grenadines	2012
11.	United States of America	1970
12.	Uruguay	2012

#### 2) Aruba:

There is no transmission of Malaria in Aruba. [4]

#### 3) Belize:

Belize reported its last case of Malaria in December 2018 and since then has not had any cases since 2019. Therefore, it is aiming to become certified as free of Malaria during 2022. [5]

#### 4) Bermuda:

There is no transmission of Malaria in Bermuda. [6]

#### 5) Bolivia:

During 2021, there were 4572 confirmed cases of Malaria in Bolivia. All were due to *P. vivax*; there were no cases due to *P. falciparum*. The bulk of the cases occurred in the northern part of the country with very few in the southern part. [7]

#### 6) Brazil:

During 2021, there were 189,503 confirmed cases of Malaria in Brazil. Of these, 90% were due to *P. vivax* and 10% were due to *P. falciparum*. All the cases occurred in the northern part of the country. [8]

#### 7) British Virgin Islands:

Malaria is not present in the Islands. [9]

#### 8) Cayman Islands:

Malaria is not present in the Cayman Islands. [10]

#### 9) Colombia:

During 2021, there were 52,805 confirmed cases of Malaria in Colombia. Of these, 42% were due to *P. vivax* and 58% were due to *P. falciparum*. All the cases occurred along the north-western and south-eastern borders of the country with a Malaria-free zone in between. [11]

#### 10) Costa Rica:

As of 8 March 2022, Costa Rican health authorities reported continued transmission of Malaria in the Zona Norte region of the country. [12] The Costa Rica Ministry of Health reported that from 1<sup>st</sup> January to 18<sup>th</sup> June 2022, 256 cases of the disease were recorded. [13]

#### 11) Curacao:

There is no transmission of Malaria in Curacao. [14]

#### 12) Dominican Republic:

During 2021, there were 341 confirmed indigenous cases of Malaria in the Dominican Republic. All were due to *P. falciparum*; there were no cases due to *P. vivax*. The bulk of the cases occurred in the eastern part of the country with few cases in the southern and western parts. [15]

#### 13) Ecuador:

During 2021, there were 1275 confirmed cases of Malaria in Ecuador. Of these, 75% were due to *P. vivax* and 24% were due to *P. falciparum*. The bulk of the cases occurred in the eastern part of the country with a few Falciparum cases in the northern part. [16]

#### 14) El Salvador:

El Salvador was certified as Malaria-free on 25<sup>th</sup> February 2021. [17]

#### 15) French Guiana:

During 2021, there were 554 confirmed cases of Malaria in French Guiana. Of these, 91% were due to *P. vivax* and 8% were due to *P. falciparum*. While the Vivax cases occurred throughout the country, the Falciparum cases were seen in the southern and central parts. [18]

#### 16) Grenada:

There is no Malaria transmission in Grenada. [19]

#### 17) Guadeloupe:

Around ten imported cases of Malaria occur in Guadeloupe per year. [20]

#### 18) Guatemala:

During 2021, there were 3743 confirmed cases of Malaria in Guatemala. Of these, 99% were due to *P. vivax*. The bulk of the cases occurred mainly in the northern, central, and southern parts of the country. [21]

#### 19) Guyana:

In Guyana, around 20,000 cases of Malaria occur annually. [22]

#### 20) Haiti:

Malaria is endemic in Haiti. There were 8828 cases reported in 2019. [23]

#### 21) Honduras:

During 2021, there were 1277 confirmed cases of Malaria in Honduras. Of these, 90% were due to *P. vivax* and 10% were due to *P. falciparum*. While both Vivax and Falciparum cases were seen to concentrate in the eastern part of the country, a few Vivax cases were also seen in other parts. [24]

#### 22) Jamaica:

There is no Malaria transmission in Jamaica. [25]

#### 23) Martinique:

There is no transmission of Malaria in Martinique. [26]

#### 24) Mexico:

During 2021, there were 736 confirmed indigenous cases of Malaria in Mexico. All were due to *P. vivax*; there was no cases due to *P. falciparum*. The bulk of the cases occurred in the north-western and southern parts of the country with a few in the central part. [27]

#### 25) Montserrat:

There is no Malaria transmission in Montserrat. [28]

#### 26) Netherlands Antilles:

Malaria is not present in the Netherlands Antilles. [29]

#### 27) Nicaragua:

During 2021, there were 10,949 confirmed cases of Malaria in Nicaragua. Of these, 82% were due to *P. vivax* and 17% were due to *P. falciparum*. While both Vivax and Falciparum cases were seen to concentrate in the north-eastern part of the country, a few Vivax cases were also seen in the eastern and southern parts. [30]

28) Panama:

During 2021, there were 649 confirmed indigenous cases of Malaria in Panama. Of these, 99% were due to *P. vivax*. The bulk of the cases occurred mainly in the eastern part of the country with a few in the western part. [31]

29) Paraguay:

Paraguay was certified to be free from Malaria by the W.H.O. on 11<sup>th</sup> June 2018. [32]

30) Peru:

During 2021, there were 55,367 confirmed cases of Malaria in Peru. Of these, 75% were due to *P. vivax* and 24% were due to *P. falciparum*. While both Vivax and Falciparum cases were seen to concentrate in the north-eastern part of the country, a few Vivax cases were also seen along the eastern border. [33]

31) Puerto Rico:

There is no transmission of Malaria in Puerto Rico. [34]

32) Saint Lucia:

There is no Malaria transmission in Saint Lucia. [35]

33) Sint Maarten:

There is no Malaria transmission in Sint Maarten. [36]

34) Suriname:

During 2021, there were 40 confirmed cases of Malaria in Suriname. Of these, 89% were due to *P. vivax* and 10% were due to *P. falciparum*. Active foci of transmission were present along the eastern border. [37]

35) Trinidad and Tobago:

Malaria is not present in Trinidad and Tobago. [38]

36) Turks and Caicos:

There is no Malaria transmission in the Turks and Caicos Islands. [39]

37) Venezuela:

During 2021, there were 411,586 confirmed cases of Malaria in Venezuela. Of these, 76% were due to *P. vivax* and 23% were due to *P. falciparum*. Both Vivax and Falciparum cases were seen to concentrate in the southern and eastern parts of the country. [40]

## 4. Discussion

Thirty-one countries (Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Bermuda, British Virgin Islands, Canada, Cayman Islands, Chile, Cuba, Curacao, Dominica, El Salvador, Grenada, Guadeloupe, Jamaica, Martinique, Montserrat, Netherlands Antilles, Paraguay, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Trinidad and Tobago, Turks and Caicos, United States of America, Uruguay) are free of indigenous Malaria while the remaining eighteen (Belize, Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, French Guiana,

Guatemala, Guyana, Haiti, Honduras, Mexico, Nicaragua, Panama, Peru, Suriname, Venezuela) are progressing towards that target. A lot of them face the problem of cross-border Malaria which adds to the complexity of achieving the elimination goals.

## 5. Conclusion

From the above, parts of the Americas are at two diametrically opposite poles when it comes to the status of Malaria control in the region. While one part has largely eliminated the disease, a major part of the Americas is still battling to bring it under control. Most of the countries of the Americas were able to eliminate Malaria more than half a century ago and in a large part this was due to advances in improving sanitation so that breeding places for the mosquitoes ceased to exist. The remaining part of the Americas still faces the dual plagues of poverty and poor sanitary conditions which permit breeding of the Anopheles mosquitoes.

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