

# PLAN OF ACTION FOR MALARIA ELIMINATION 2021–2025

## COLABORADOR VOLUNTARIO DE MALARIA



Primaquina



Cloroquina



Aquí se hace la prueba rápida, se toma  
gota gruesa y se entrega medicamento  
para el paludismo (malaria)



## GRATIS



Pan American  
Health  
Organization



World Health  
Organization  
REGIONAL OFFICE FOR THE  
Americas

PAHO/CDE/VT/22-0005

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# Introduction

In 2016, the Region of the Americas expressed solidarity and commitment to the global goal of eliminating malaria. The 55th Directing Council of the Pan American Health Organization (PAHO) approved Resolution CD55.R7 (1) and requested the Director to support the execution of the Plan of Action for Malaria Elimination 2016–2020 (2) as well as coordinate Region-wide efforts to eliminate local malaria transmission and prevent its potential reestablishment in malaria-free areas, in collaboration with countries and partners (1).

Following a sustained trend toward reduction of malaria from 2005 to 2014, since 2015, the Region of the Americas has experienced an increase in the total number of cases and deaths, mainly as an effect of the massive rise in transmission and outbreaks in areas with complex sociopolitical and economic challenges and recently compounded by other challenges brought about by the COVID-19 pandemic (3). This document presents an overview of the Region's progress vis-à-vis CD55.R7;<sup>1</sup> reinforces its alignment with the Global Technical Strategy (GTS) for Malaria 2016–2030, which was updated in 2021 to emphasize country ownership, promotion of equitable and resilient health systems to deliver quality services, and tailoring of malaria interventions to the local context (4, 5); and clarifies the Region's targets and commitments for the next five years in alignment with global goals and PAHO's key mandates.

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<sup>1</sup> Annex A presents the assessment and corresponding status of indicators under the Region's Plan of Action for Malaria Elimination 2016–2020.



# Background

Malaria efforts in the Region are guided by the Strategic Plan for the Pan American Health Organization 2021–2025 (6), the Sustainable Health Agenda for the Americas 2018–2030 (7), the Essential Public Health Functions in the Americas: A Renewal for the 21st Century. Conceptual Framework and Description (8), the Global Technical Strategy (GTS) for Malaria 2016–2030 (9), the Action and Investment to defeat Malaria (AIM) (10), and the United Nations Sustainable Development Goals (11). The Plan also contributes to the fulfillment of other essential mandates from the PAHO Directing Council, including CD59/9 – One Health: A Comprehensive Approach for Addressing Health Threats at the Human-Animal-Environment Interface (2021) (12); CD57/7: PAHO Disease Elimination Initiative: A Policy for an Integrated Sustainable Approach to Communicable Diseases in the Americas (2019) (13); CD53/5: Strategy for Universal Access to Health and Universal Health Coverage (2014) (14); CD53/10, Rev. 1: Plan of Action on Health in All Policies (15); and CD56/11: Plan of Action on Entomology and Vector Control 2018-2023 (2018) (16), among others.

Paralleling the global trend, progress on achieving regional targets for reductions in malaria burden has stalled since 2015. Between 2015 and 2019, malaria cases and deaths in the Region increased by 80% and 24%, respectively (17). The increase in cases was driven primarily by the continuing epidemic in Venezuela (Bolivarian Republic of), which in recent years has reported the highest number of malaria cases in its recorded history. Overall case increases of approximately 50% were reported in Colombia, Dominican Republic, Ecuador, Guyana, Nicaragua, and Panama. On the other hand, additional countries in the Region effectively stopped local malaria transmission during this period. Paraguay was certified malaria-free in 2018, followed by Argentina in 2019. El Salvador completed three years without local transmission in 2019 and was certified as malaria-free in February 2021. This brought the number of malaria-endemic Member States in the Region to 18, down from 21 in 2015. Belize also had no local transmission in 2019 and 2020 (preliminary data), putting it on track to be certified as malaria-free in 2022 (18).







# Situation Analysis

In 2019, the Region reported approximately 816,000 confirmed cases of malaria and 197 deaths compared to 453,000 cases and 159 deaths, respectively, in 2015. About 76% of reported cases were caused by *Plasmodium vivax* and 24% by *P. falciparum*. Between 2015 and 2019, six out of every 10 cases reported in the Americas occurred in men. In the same period, most cases were reported among those aged 15–19 and 20–24 years. For countries where information was available, 18% of cases in 2019 were in miners (n = 102,000, across 9 countries), 15% were in indigenous populations (n = 104,000, across 14 countries), and 8,600 were in pregnant women (in 16 countries). Socioeconomic determinants, particularly the migration of people due to economic activities such as gold mining and agriculture, which occurs alongside the context of weak health services for these populations, have notably contributed to these trends.

Preliminary information sourced from national epidemiological reports for 2020 suggests an increase in incidence in seven countries (Bolivia [Plurinational State of], Costa Rica, Haiti, Honduras, Nicaragua, Panama, and Suriname), while there was a 27% decline in malaria incidence regionally (596,000 cases). The decrease in the total number of cases could be partly due to an actual reduction in transmission in certain countries. At the same time, weakened health-seeking behavior among patients in general and especially for fever consultations in malaria-endemic areas during the COVID-19 pandemic may have led to a decline in reported cases in many areas, although this impact is not uniform.

During the five-year implementation of the Plan of Action, malaria-endemic countries made changes that helped reorient control programs toward malaria elimination in accordance with the World Health Organization (WHO) global elimination framework (19). In coordination with donors, partners, and stakeholders, the Pan American Sanitary Bureau (PASB) has promoted the Diagnosis–Treatment–Investigation, and Response (DTI-R) strategy, which involves intensified action to improve the detection and timely treatment of cases. Other critical elements of change are stratification based on receptivity and risk of importation and action to identify and eliminate the malaria foci in each country. Best practices in implementing the DTI-R approach have been demonstrated and documented in several countries, including through the Malaria Champions of the Americas (20).

By the end of 2020, most malaria-endemic countries had incorporated these elements into their national malaria plans. The Central American countries, together with Colombia and the Dominican Republic engaged in the Regional Malaria Elimination Initiative (RMEI), which consolidated the efforts of new donors and partners with prior investments made by the countries themselves and by the Global Fund to Fight AIDS, Tuberculosis, and Malaria. Since 2016, seven countries in the region have become part of the WHO E-2020 initiative (21) and have received technical support to achieve their national elimination goals. By the end of 2020, four additional countries met the criteria established by WHO for countries with the potential to eliminate malaria by 2025 and were invited to be part of the E2025 initiative.

In Venezuela (Bolivarian Republic of), which has seen a massive increase in cases since 2015, PASB has provided continuous support for the malaria response, resulting in the prevention of drug shortages and improvements in the prevention of mortality. These advances are expected to be sustained and consolidated with the approval of a Global Fund project for 2021–2023.

Across the region, countries are engaged in ongoing collaboration to reduce transmission in the highest-burden municipalities, with the help of regional and international partners (22). Data for the past

three years indicate that 25 municipalities in the Region account for 45–50% of all reported malaria cases in the Region of the Americas, while 25–70% of all malaria cases at the country level are usually concentrated within no more than three municipalities per country. Apart from being remotely located, populated mainly by indigenous populations or ethnic minorities, and having a high prevalence of risk factors such as gold mining, these municipalities also have weak health systems due to multiple social and economic reasons. The high malaria burden municipalities in the Region are located in Brazil, Colombia, Guatemala, Guyana, Haiti, Honduras, Nicaragua, Peru, and Venezuela (Bolivarian Republic of). By the end of 2019, some of these municipalities had already shown reductions in transmission.

For 2019, nine Member States and territories declared free of malaria transmission reported or publicly published 2,002 malaria cases, mostly occurring among travelers from endemic countries. From 2015–2019, the United States of America, Canada, Cuba, and Trinidad and Tobago together reported almost 99% of malaria cases among the non-endemic Member States. In the same period, a total of 8,708 cases were reported as imported by 13 of the endemic countries in the Americas, with 91% of those cases (n = 7,891) originating from four countries and territories (Venezuela [Bolivarian Republic of], Guyana, Colombia, and French Guiana). Brazil reported the largest number of cases detected in its territory imported from other countries (n = 4,005 cases) (18).

Most of the malaria prevention and control budget in the Americas between 2015 and 2019 came from national governments. During this period, the governments invested just over US\$ 700 million, representing approximately 85% of total financing for malaria in the Americas. Six countries (Bolivia [Plurinational State of], Brazil, Colombia, Costa Rica, Mexico, and Venezuela [Bolivarian Republic of]) showed a decline in malaria funding from the national government over the same period. Nevertheless, six endemic countries (Brazil, Colombia, Haiti, Nicaragua, Panama, and Peru) increased their government budget in 2019 compared to 2018 (18).

Since 2002, the Global Fund to Fight AIDS, Tuberculosis, and Malaria has invested approximately US\$ 365 million in malaria elimination efforts in the Americas (23), accounting for the majority of external financial investments for malaria in the Region. Other strategic and high-yielding investments from United States Agency for International Development (USAID), Malaria Zero, United Nations Foundation, and other partners are also directed to the Region to address critical gaps. The RMEI was launched in 2018 to support Central American countries and the Dominican Republic toward taking the final steps necessary to eliminate malaria, with the subsequent incorporation of Colombia.

Effective best practices, including stratification based on receptivity and risk of importation to plan malaria interventions, the DTI-R strategy, and microstratification analyses, have been implemented and documented to be very useful in several countries, including through the Malaria Champions of the Americas (20).

Overall, the results of the Region's collective efforts have been very positive in achieving targets among countries deemed very close to malaria elimination. However, progress has been irregular and relatively disproportionate as specific areas experience increasing malaria cases and deaths. The challenges driving this situation concur with the updated and reordered principles of the GTS for Malaria and are noted as follows:

- a. Country ownership and leadership, with the involvement and participation of communities, are essential to accelerating progress;
- b. Need for implementing an effective data-driven response and “problem-solving approach” to the malaria situation at the local level based on approaching gaps in prevention, early detection, and treatment;



- c. Need to address contextual specificities and accelerate elimination not just in countries that are deemed very close to malaria elimination but also including high-burden countries, understanding that all countries can accelerate efforts toward elimination;
- d. Need to effectively address key challenges and gaps regarding biological aspects of the disease (relapses and other *P. vivax* issues, resistance to antimalarial drugs and insecticides, etc.);
- e. Countries should reinforce their capacities toward resilient health systems in malaria-endemic areas and strengthen especially health care as a mechanism to deliver malaria services to affected groups such as indigenous peoples, migrants, miners, and hard-to-reach populations;
- f. Need for intersectoral action against malaria, including government and nongovernment actors; primarily actions by productive sectors such as formal and informal gold mining that contribute significantly to the pervasiveness of malaria transmission;
- g. Need to reinforce the commitment of stakeholders and translate them accordingly to resources that are invested toward malaria efforts, given the unprecedented global economic challenges that seriously threaten and affect funding levels for health sectors in the Region.



# Plan of Action (2021–2025)

This Plan of Action seeks to mitigate the evolving challenges that have hampered the Region’s progress and reinforce the capacities of Member States toward malaria elimination and prevention of the pervasive threat of the reestablishment of the disease. While continuing to subscribe to the GTS 2030 global goals, the Region adjusts its targets based on the ongoing trajectory of malaria cases and deaths, the commitment of stakeholders in terms of support and resources, and the consensus that the burden of malaria tends to change drastically (and quickly) within relatively short periods. The Region commits to the following updated list of targets for the 2021–2025 period (Table 1):

- a. 75% reduction in malaria-related mortality rates<sup>2</sup> compared with 2015;<sup>3</sup>
- b. At least 14 (out of 18) endemic countries achieved the 75% WHO-GTS target reduction in malaria case incidence compared with 2015;
- c. Eliminate malaria from countries in which malaria was transmitted in 2015<sup>4</sup> in at least four additional countries;<sup>5</sup>
- d. Sustained prevention of the reestablishment of malaria in malaria-free countries.

Considering the complexity of the interactions of COVID-19 and malaria in the context of the ongoing health system and socioeconomic perturbations, these targets are set acknowledging the uncertainty around the medium/long-term effects of the COVID-19 pandemic on the malaria situation and response. Further review of strategic approaches and priorities, including needed resources for acceleration of efforts, is deemed necessary as longer-term effects of COVID-19 and other future potential disruptions become better understood.

<sup>2</sup> Reduction in the number of deaths is deemed essential to be complemented by maintaining or even further reducing the case fatality rate below a certain threshold. Since 2001, this index at the country level has ranged between 0 and 1.64%. The index was between 0.022 (2013) and 0.038% (2001) at the regional level, with an annual average of 0.029%. The case fatality rate in the Region was 0.035% and 0.043% in 2015 and 2018, respectively.

<sup>3</sup> In 2015 the number of deaths from malaria in the Region was 169. In 2018, the countries reported a total of 348 deaths. The goal of 75% reduction with respect to 2015 corresponds to 42 deaths.

<sup>4</sup> Countries with zero indigenous cases during the previous year.

<sup>5</sup> In 2019, nine countries or territories reported fewer than 2,081 indigenous cases (preliminary data), four of which reported fewer than 500 cases. (Does not include Belize and El Salvador with zero cases in 2019).



**TABLE 1. IMPACT INDICATORS AND TARGETS**

IMPACT INDICATORS	2015	2020	2025
<b>1. Reduction of malaria mortality regionally compared to 2015 in malaria endemic countries<sup>1</sup></b>	<b>N/A (169)</b>	<b>-31% (108)</b>	<b>-75% (42)</b>
<b>2. Number of malaria endemic countries that achieved WHO/GTS reduction targets of 75% for malaria case incidence compared to 2015<sup>2</sup></b>	<b>N/A (21)</b>	<b>6 (19)</b>	<b>14 (18)</b>
<b>3. Number of countries and territories where malaria was endemic in 2015 in which the disease has been eliminated<sup>3</sup></b>	<b>N/A</b>	<b>3</b>	<b>7</b>
<b>4. Number of malaria-free countries and territories that have prevented reestablishment of malaria transmission</b>	<b>13</b>	<b>15</b>	<b>17<sup>4</sup></b>

<sup>1</sup> Numbers in brackets indicate the number of deaths. By 2020, there was an -31% reduction in mortality compared with 2015.

<sup>2</sup> Numbers in brackets indicate total number of malaria-endemic countries in that year. Since 2015, Argentina and Paraguay were certified malaria-free by 2020, thus 19 endemic countries in 2020, and El Salvador in 2021, thus 18 countries for 2025.

<sup>3</sup> Countries with zero indigenous cases during the previous year.

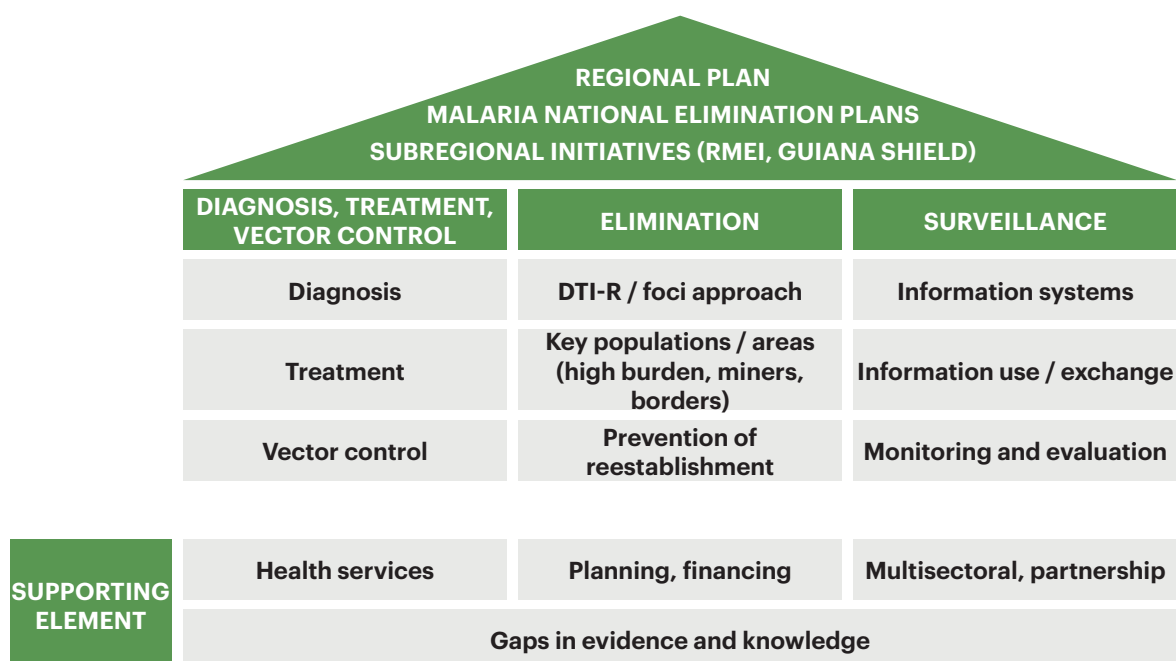
<sup>4</sup> The target will include those countries considered receptive for malaria among the list of countries recognized as malaria-free by WHO since 1961. If a country achieves malaria elimination in 2021 or 2022, it will be included in this target.

# Strategic Lines of Action

The goals to be achieved require changes in action against malaria that must occur at the operations level and for which regulatory and policy adjustments are required from the national levels. The Plan of Action seeks to promote this change in malaria programs in the countries and through the interactions among all actors. The main element of this change is the concept of making the routine of caring and responding to each individual case the basic action of elimination. Thus, the DTI-R strategy promotes a systematic action of detection and response, which must be massively implemented and monitored programmatically. It is the quality of the routine interventions that will make the difference. Stratification and local dynamics will dictate the granularity and timing of the response. Another main element of change is action aimed at recognizing the need to address key malaria foci in each country with concrete, information-based operational solutions. The plan promotes these principles for all countries regardless of the number of cases but with differences marked by a dynamic stratification exercise focused on the analysis of receptivity and vulnerability. Thus, the Plan of Action operationalizes in the Americas the concepts of surveillance as intervention and elimination as a continuum promoted by the WHO GTS for Malaria and in the Global Framework for the Elimination of Malaria.

The Plan of Action is conceived in such a way that the elimination component (Strategic Line 2) is the center or main axis where the other components converge (Figure 1). The DTI-R strategy depends on all the other components. The improvement of the basic malaria operation at the most local levels requires the platforms and environments that need to be promoted with the supportive elements, with primary health care and basic public health surveillance structures as the main foundation. Similarly, improving delivery of core malaria interventions depends on technical guidance, capacity development, supply of commodities (rapid diagnosis tests, drugs, etc.), and information processes, which are sought to be strengthened in Strategic Lines 1 and 3.

**FIGURE 1. PLAN OF ACTION STRUCTURE. STRATEGIC LINES OF ACTION AND OBJECTIVES**



The model proposed in this plan is based on a cross-functional dialogue and interconnections across the strategic lines of action (SL). SLs 1, 2 and 3, which correspond to the three pillars of the WHO-GTS, complement one another, and are not designed to function independently. The concept of surveillance as an intervention, which is key to the elimination of malaria, is the result of the complementarity among the three pillars. The parasitological diagnosis of malaria is the basis for surveillance and the trigger for the cascade of actions in which the acceleration of elimination is operatively founded. The idea of the consolidated supportive elements – strengthened health systems and promotion of resilience through strategic planning and management, financing, partnerships, advocacy, and operational research (SL 4) – is to provide the platform, operational structures, and alliances for the more specific malaria interventions presented in SLs 1, 2, and 3.

Some initiatives and actions are therefore mentioned in more than one line of action. In fact, strategic transversality is a key and deliberate characteristic of this Plan of Action. Primary health care, which is a requirement for the elimination and prevention of reestablishment, is addressed as a key supportive element essential for the development of the three lines of action, especially when the Plan in general prioritizes the response at the local level. The initiative on the municipalities with the highest burden is aimed at accelerating elimination (SL2) in the Region, but it is mainly based on coordinated action of the local primary care network with a strong component of advocacy, multisectorality, alliances, and community participation (SL 4), empowered to implement the malaria interventions (SL 1).

The model also reinforces the integration and consideration of cross-cutting issues, including gender, ethnicity, human rights, and equity toward the achievement of universal health coverage, and outlines the following SLs as key components of the Plan of Action for Malaria Elimination 2021–2025.



## Strategic Line of Action 1. Universal Access to Good-quality and Timely Malaria Diagnosis, Treatment, and Vector Control Interventions

As the Region progresses toward universal health care, access to good-quality and timely malaria diagnosis and effective treatment in public and private health facilities and mainly at community level, as well as the delivery of vector control interventions, continues to be a major challenge in areas where the burden of the disease remains high; similar challenges exist for maintaining minimum service/technical capacities in countries preventing reestablishment. Etiological diagnosis is the basis of the entire cascade of actions in treatment, surveillance, and response. All confirmed cases of malaria should receive appropriate and effective treatment, including radical cure for *P. vivax* infections, and low-dose primaquine to reduce transmission of *P. falciparum* infections. National authorities should establish operational guidance, processes, and mechanisms on how these key interventions are implemented in various settings. Coordination with other components of the health system is essential to advance toward universal access to the diagnosis and treatment of malaria. The management of supply chain for medicines, rapid tests and diagnostic supplies, and vector control commodities remains a challenge for the countries, and it will remain for longer given the challenges presented by the COVID-19 pandemic.

Following PAHO recommendations, vector control activities should be implemented effectively to reduce malaria and prevent reestablishment of transmission. Entomological surveillance should be able to characterize receptivity to guide stratification and selection of interventions, determine the seasonality of transmission for optimal timing of interventions, and monitor the susceptibility/resistance of vectors to insecticides used in vector control. A gap persists in the Region in communities affected by malaria which are not regularly covered by the recommended vector control measures.

**TABLE 2. OBJECTIVES AND INDICATORS. STRATEGIC LINE 1**

OBJECTIVES	INDICATORS	BASELINE (2021)	TARGET (2025)
1.1 Strengthen operational capacity to implement malaria diagnosis in various program contexts	1.1.1 Number of endemic countries and territories with > 70% of malaria cases diagnosed (and treated) within 72 hours of the onset of symptoms	5	9
1.2 Update malaria treatment policies based on evidence and ensure their proper implementation, including the supply chain and improvements in case management by service providers	1.2.1 Number of countries with no stockouts of PAHO/WHO-recommended treatment regimens (during the previous year)	19	21
1.3 Ensure the implementation of vector control recommended interventions with full coverage and quality in at risk populations	1.3.1 Number of countries and territories with high coverage of recommended malaria vector control intervention, in high-risk population	9	18

To guide the implementation of this line of action, the Plan establishes three objectives and indicators (Table 2) and the following actions:

### Recommended actions to address issues and challenges in malaria diagnosis:

- Strengthen incorporation of malaria diagnosis and treatment within the primary healthcare system;

- Improve community health worker policies, budgetary support, supervision, and other needs related to providing basic care for hard-to-reach populations;
- Promote social and behavior change communication activities to encourage prompt care-seeking for fever (passive case detection);
- Strengthen and sustain national systems for quality assurance of malaria diagnosis and maintain national capacities for microscopy in a context where generations of highly qualified program personnel are retiring;
- Develop and implement comprehensive national policies for programmatic implementation of rapid diagnostic testing, including financing, procurement, management, training, quality assurance, and use;
- Address the histidine rich protein 2 deletion and other challenges related with rapid diagnostic testing performance, including regional-level participation in global innovation efforts, and facilitate access to innovations and recommended products;
- Promote alliances and initiatives toward greater autonomy in the Region for accessing basic malaria case management supplies.

#### **Recommended actions to address issues and challenges in malaria treatment:**

- Improve policies for effective and safe radical cure for *P. vivax*, given the critical role of relapses in maintaining transmission;
- Strengthen policies and implementation to address the threat of artemisinin resistance, particularly in areas with gold mining in South America, such as the Guiana Shield, where conditions exist for monotherapy, self-medication, and use of counterfeit drugs;
- Strengthen supply chain management to reduce the risk of stockouts and secure malaria commodities that are important for prompt diagnosis, treatment, and protection of healthcare workers.

#### **Recommended actions to address issues and challenges in vector control:**

- Strengthen vector control response (structural, policy, technical, operational) to ensure adequate implementation of information-guided interventions, including policies to address problems due to decentralization as well as loss of well-trained vector control technicians and practicing entomologists;
- Address persistent coverage gaps with basic vector control interventions and improve decision-making process in vector control, considering that in some settings “core malaria interventions” (indoor residual spraying and long-lasting insecticidal nets) are not used or are not being implemented under recommended standards. Improve and increase the scope of implementation of long-lasting insecticidal nets based on local analysis, microstratification, and strategic planning;
- Discourage misuse of interventions to decrease vector density that are not recommended as primary interventions against malaria by WHO/PAHO (space spray and larval source management), while promoting efforts to implement rational use of habitat modification/manipulation actions when indicated and encouraging operational research to respond to existing evidence gaps in vector control measures (e.g., control of exophilic and exophagic vectors);
- Ensure implementation of vector control interventions based on entomological surveillance,



correct and rational use of insecticides, and surveillance and management of the insecticide resistance. Develop the corresponding national policies and frameworks;

- Clarify vector control options and alternatives across contexts (including among mobile populations). Define alternative vector control methods and corresponding research to address the predominantly exophagic and exophilic behavior of the main vectors in the Region;
- Address supply chain and administrative bottlenecks that inhibit timely registration, purchase, and delivery of insecticides;
- Coordinate malaria vector control activities with other vector-borne disease programs to increase programmatic synergies and efficiencies in the context of limited resources;
- Promote social and behavior change communication activities among affected communities to encourage proper use and implementation of vector control interventions.

## **Strategic Line of Action 2. Accelerated Malaria Elimination and Ensure Prevention of Reestablishment in Malaria-free Areas**

Given the plateau and, in some cases, significant increases in the burden of malaria, key interventions that can maintain and accelerate malaria elimination at the foci level, and the prevention of its reestablishment should remain a priority.

Countries should have a clear strategy for malaria elimination, supported by an effective national program and an independent elimination advisory committee, with advocacy for appropriate resourcing and a community actively engaged in local elimination activities. Operational changes to accelerate elimination should be introduced into the routine of local teams. An intervention founded on the early detection, treatment, investigation, and response must be implemented as a programmatic approach. Malaria foci should be identified, and an operational approach developed to identify the local dynamic of the malaria transmission and develop a response - micro plan. In addition, specific strategies to accelerate reductions in transmission and reduce the time to elimination should be implemented safely and effectively.

Countries that are near elimination or preparing for certification need a multisectoral, comprehensive plan to prevent onward transmission from any imported cases and respond immediately to introduced or indigenous cases to prevent reestablishment of transmission.

To guide the implementation of this line of action, the Plan establishes three objectives and indicators (Table 3) and the following actions:

### **Recommended actions to address issues and challenges to ensure early testing, treatment, and investigation of cases and transform active foci into cleared:**

- Develop awareness and capacity from national to local level in identifying, characterizing, and managing active and residual foci and associated hot spots (microstratification and microplanning) as a mechanism to consolidate transmission-free territories;
- Transform diagnosis and treatment into an elimination intervention aiming to minimize time to test, treat, and respond to facilitate interruption of the chain of transmission. National strategy should include setting national targets for time intervals to report cases and initiate foci investigations;

**TABLE 3. OBJECTIVES AND INDICATORS. STRATEGIC LINE 2**

OBJECTIVES	INDICATORS	BASELINE (2021)	TARGET (2025)
2.1 Establish programmatic approaches to ensure early testing, treatment, and investigation of cases and transform active foci into cleared	2.1.1 Number of countries with updated foci registry	11	18
2.2 Pursue interventions and innovations to accelerate reductions in transmission with key populations or high-burden areas	2.2.1 Number of countries with reduction in cases in high-burden areas	0	9
2.3 Sustain key capacities in countries and their subnational territories to prevent reestablishment of transmission	2.3.1 Number of countries and territories implementing PAHO/WHO-recommended interventions in areas at risk of reestablishment of malaria	24	30

- Update country normative guidance to inform elimination operations in the field.

**Recommended actions to address issues and challenges to resolve critical gaps in malaria interventions with key target populations, malaria determinants, and foci that account for the higher number of cases, and pursue specific interventions and innovations to accelerate elimination:**

- Develop specific strategies, including intercultural approaches, to address malaria among key target populations – indigenous peoples, migrants, miners, and other hard-to-reach populations in challenging contexts;
- Address gaps in policies and activities regarding cross-border transmission and promote coordination across borders in terms of surveillance, diagnosis, and treatment actions;
- Bridge knowledge gaps pertaining to potential malaria elimination accelerators (e.g., mass drug administration or targeted drug administration), reactive strategies (reactive drug administration, reactive case detection or reactive vector control intervention, etc.), dynamics of transmission, role of social, climate, and environmental determinants, and other nonbiomedical aspects of malaria.

**Recommended actions to address challenges to achieve and maintain elimination of malaria and sustain key capacities in countries or subnational territories that have eliminated local malaria transmission:**

- Maintain programmatic capacities and technical resources to accomplish last stages of elimination and prevent the reestablishment of malaria;
- Enable, support, and accelerate elimination of *P. falciparum* and prevent the reestablishment of its transmission, including at subnational level;
- Develop and implement subnational verification elimination mechanisms and processes to protect gains and encourage local and intermediate political and technical cadres on elimination;
- Create a national coordinated multisectoral mechanism toward malaria elimination.



## Strategic Line of Action 3. Reinforced Malaria Surveillance and Capacities toward Evidence-based Decision-making Response

While there have been considerable improvements in malaria surveillance systems in countries across the Region, use of available data for planning and decision-making has been relatively limited, or such data have not been used in a timely fashion. The stratification of malaria risk based on transmission, receptivity, and risk of importation, as well as implementation of other approaches to promote the use of data to guide analysis and decisions at local level should be warranted in all malaria-endemic countries, as well as those that remain susceptible to the reestablishment of local transmission. Given the importance of early detection, treatment, and tracking of cases as key strategies, timeliness becomes central to all analysis and response, and countries need to be prepared to set targets for time intervals for reporting and investigation of cases and foci, and track success in achieving these targets. Surveillance systems should identify the areas and population groups most affected by malaria; assess the impact of interventions and progress toward elimination; actively identify and treat cases to prevent onward transmission, and monitor the malaria-free status of areas that have eliminated transmission.

Surveillance systems need: to provide adequate information at locality level to identify and delimit a malaria focus because of the central role and importance of microstratification and microplanning; to identify the areas with highest transmission and guide strategies such as the high-burden municipalities; to identify the high-risk populations and address specific interventions to these populations; to identify critical geographical areas, particularly borders that need to be addressed as they are the areas that take the longest to eliminate; to promptly detect outbreaks and monitor the local response. Strong surveillance systems need to be maintained to sustain the status of elimination once it is achieved. Countries also need to monitor the risk of importation (vulnerability) and the transmission potential in risk areas (receptivity), including the use of social and environmental variables into the malaria surveillance system.

To guide the implementation of this line of action, the Plan establishes three objectives and indicators (Table 4) and the following actions:

### **Actions to implement suitable tools toward the improvement of malaria information systems that facilitate decision-making:**

- Incorporate/update existing surveillance information platforms such that they are capable to provide information on sex, ethnicity, locality, and other relevant variables at all levels of decision-making and enable appropriate analysis of disparities and inequalities between populations;
- Develop/update existing malaria information platforms to guarantee nominal reporting and near-real-time notification of cases, and monitor detection efforts and performance in addressing other key bottlenecks in prompt diagnosis and treatment, leveraging on existing surveillance platforms such as fever and arboviral diseases surveillance and integrating/synergizing with other programs;
- Efforts to improve information systems must emphasize the importance of reporting the number of examined cases, monitoring the test positivity rate, and actions to determine and improve the quality of examined cases as key elements to guide passive and active case detection efforts in areas with stable transmission or those preventing reintroduction;

- Strengthen incorporation of near-real-time reporting from private sector to national malaria surveillance systems;
- Develop and adopt tools to monitor coverage and implementation of malaria vector control interventions and entomological surveillance, including actions to monitor the coverage of vector control actions in high-burden municipalities and other key populations so that current gaps in coverage and quality of primary vector control interventions may be determined and reinforced;
- Develop information tools and processes to monitor biological and clinical events and threats, such as antimalarial resistance, relapses, adverse effects to treatment drugs, histidine rich protein 2 deletions, among others, to guide improvements in case management policies;
- Promote more proactive strategies and systems to monitor key social, economic, and political events that can affect malaria transmission dynamics, importation of cases, and malaria reintroduction, such as policies with the tourism sector, migration, extractive activities, sociopolitical events, or natural disasters.

**Actions to strengthen information use and exchange at all levels to guide microplanning and prompt detection, investigation, and response actions**

- Promote capacity development of health services and malaria response teams toward the adoption of analysis routines, development and use of dashboards or other tools for periodic monitoring and decision-making at the local level including capacities for knowledge dialogue with community stakeholders;
- Prioritize the areas of greatest transmission (i.e. high-burden municipalities), the highest-risk populations, and border areas, and use the information to promptly detect outbreaks, as well as tailor the local strategy and response;
- Ensure that malaria surveillance, in the context of decentralized and/or integrated programs, retains all the necessary components to plan and monitor response;

**TABLE 4. OBJECTIVES AND INDICATORS. STRATEGIC LINE 3**

OBJECTIVES	INDICATORS	BASELINE (2021)	TARGET (2025)
3.1 Implement key tools toward the improvement of malaria information systems that facilitate decision-making	3.1.1 Number of territories/countries with information systems that provide data by sex/ethnicity, age, and locality	18	18
3.2 Strengthen and improve information use and exchange at all levels to guide microplanning and prompt detection, investigation, and response actions	3.2.1 Number of countries and territories with > 80% of malaria cases investigated and classified in areas targeted for elimination or prevention of reestablishment	22	28
3.3 Reinforce monitoring and evaluation of programs	3.3.1 Number of countries with an updated malaria risk stratification map (for the most recent calendar year) of the country based on level of transmission, risk of importation and receptivity	11	18



- Improve public access to malaria information and tools as a mechanism to engage the community and other actors, and to guide the provision of services;
- Foster and facilitate cross-border surveillance and information-sharing across countries with strongly linked malaria transmission dynamics, such as some countries in Central America and in the Guiana Shield.

#### **Actions to reinforce monitoring and evaluation of programs:**

- Enhance the capacity of programs to evaluate operational changes and impact of interventions or strategies;
- Implement capacities and actions for pinpointing areas of transmission, monitoring the risk of importation (i.e. understanding the movement of the population from and to endemic areas), and receptivity to guide development of annual malaria risk stratification maps;
- Support countries in the use of key PAHO/WHO-recommended malaria surveillance tools (including standardized methods for situational diagnosis and assessment of progress);
- Variations in terms of urban versus rural malaria, the subnational elimination of *P. falciparum*, the number of active versus cleared foci, and other key epidemiological events and factors must be monitored as key milestones in the national strategic plans to drive effective policies and protect gains.

## **Strategic Line of Action 4 (Supporting Elements). Strengthened Enabling Environment and Promotion of Relevant Research for Sustainable and Equitable Results**

While appreciating best efforts to retain intensified attention on malaria-specific interventions, targets, and deliverables, the role of a robust health system and health sector response remains of utmost importance and must facilitate resilience through strategic planning and management, financing, partnerships, and advocacy. Malaria efforts and health systems strengthening (including information systems, human resources for health, laboratory systems, health product management, service delivery, and quality assurance, planning, community systems strengthening, program management, etc.) and response must be synergistic and enabling of one another. Integration of efforts into the public health services across related programs and populations must be pursued optimally, taking advantage of synergies toward better health services. Strong emphasis should be placed on the development of resilience and efficiencies that include: the enactment of necessary legislation; robust health sector response; strengthened health workforce and malaria expertise; and promotion of in-country collaboration across sectors (public/private), among others.

Current gains in strategic advocacy, communications, partnerships (public and private), and collaborations that have become key enablers of malaria elimination in the Region must also be optimized toward effecting political commitment across all levels of governance, community engagement, and translating these toward sustaining appropriate levels of international and domestic financing. Above all, the main pillars of public health in the affected territories must be prioritized, especially primary health care, the operational capacity to interface with the communities, surveillance, human resources, effective supply systems, community participation, and all the essential elements necessary for the provision of services in rural areas.

To guide the implementation of this line of action, the Plan establishes four objectives and indicators (Table 5) and the following actions:

**Actions to support integration of malaria activities into public health services, particularly through primary care strategies:**

- Involve primary healthcare networks and hospitals (public and private) in collaboration with the malaria program in the diagnosis and treatment of malaria to improve detection and reporting and to reduce morbidity and mortality. Malaria actions need to be incorporated into the national primary care network;
- Strengthen the primary healthcare network's structure and policies in rural areas with hard-to-reach populations affected by malaria – including policy aspects related to institutional structure for supporting malaria interventions through community health workers, who are noted to be a strong resource for increased service delivery in many countries;
- Considering the important incidence of malaria in children, particularly in some indigenous communities, specific actions to integrate malaria case management with basic primary care strategies such as the Integrated Management of Childhood Illness must likewise be pursued;
- The importance of essential public health functions as a key platform for actions on malaria should be recognized, including the need to update the analysis and solutions on issues related to malaria program management, information, and surveillance;
- In coordination with the health service, attention should be given to implement concrete and effective primary care solutions to address malaria case management in indigenous communities, pregnant women, and other key target populations;
- Advocate for adaptive measures and innovations in response to the evolving new normal (telemedicine, streamlined information flows, expedited processes, etc.).



**Actions to promote resilient malaria actions through enabling legislation, financing, and strengthening human resources structures and capacities:**

**Enabling legislation and policies:**

- Address public policy gaps and barriers in general aspects of health care for affected populations and specific to malaria elimination actions;
- Develop national malaria elimination plans that serve to promote sustained interprogrammatic action at the central level while offering effective mechanisms to address specific bottlenecks at the local level;
- Strengthen national and subnational governance structures that guarantee the effective management of the activities included in SLs 1–3 and their integration into national strategies to strengthen primary health care;
- Strengthen national plans to promote resilience; risk analysis, management, and mitigation; forward thinking;

**Strengthening human resources capacity:**

- Promote and develop policies, enabling platforms, and networks to ensure adequate workforce at all levels, including the conduct of human resources for health gap analysis and development of corresponding plans;
- Enhance capacity-building in strategic planning, leadership, malaria technical skills, program management, and other relevant areas to address changes occurring through decentralization and health system reforms, including loss of appropriately trained malaria personnel;
- Assure continued training in specific competencies in malaria program implementation and evaluation, including aspects of malaria elimination;

**TABLE 5. OBJECTIVES AND INDICATORS. STRATEGIC LINE 4**

OBJECTIVES	INDICATORS	BASELINE (2021)	TARGET (2025)
4.1 Support integration of malaria activities into public health services, particularly through primary care strategies	4.1.1 Number of countries reporting malaria diagnosis by type of health facility	11	18
4.2 Promote strategic planning, and management, financing, and health workforce strengthening	4.2.1 Number of countries with national malaria elimination plans including interprogrammatic approach	12	18
4.3 Strengthen the capacity of national programs on intra- and inter-sectoral dialogue, collaboration with partners and stakeholders, advocacy, and replication of best practices	4.3.1 Number of countries with multisectoral committee and/or other forms of multisectoral collaboration in malaria (including integrated disease elimination efforts)	11	18
4.4 Collaborate in addressing gaps in knowledge and evidence that are essential to malaria program implementation and operations	4.4.1 Number of countries with malaria operational research agenda or research component at the strategic plan	11	18



## Financing:

- Strengthen currently limited financial capabilities, specifically in the area of resource generation and mobilization, across various levels of the malaria programs and in the health systems of the affected areas. Increase (or at a minimum, stabilize) domestic funding for malaria particularly in countries with continuing transmission;
- Mitigate against declines in country commitments and important multilateral initiatives and other funding support potentially affected by the ongoing COVID-19 pandemic and anticipated global recession. The financing of the malaria response must be a concern in the current context of economic crisis and challenges for the countries;
- Emphasis must also be given toward identifying other sources that include financing for basic malaria supplies;
- Enhance efforts to find alternative funding support for countries that that will no longer qualify for Global Fund resources in the coming years, which includes the highest-burden countries in South America or specific projects that include territories of countries with high-burden areas; and provide technical assistance to these countries for the development, implementation, monitoring, and evaluation of their respective projects.

## **Actions to strengthen intra- and inter-sectoral dialogue, partnership with strategic allies, collaboration with affected communities and stakeholders, advocacy, and replication of best practices:**

- Optimize interprogrammatic work among the different health actors involved from both the public and private sectors and improve synergy with and between the various external support initiatives throughout the Region and within countries;
- Improve intersectoral management to address the impact on malaria of gold mining and other extractive activities as these industries are associated with increased malaria transmission in the Region, and are directly related to areas of greater burden and other risk factors, especially regarding parasite resistance to antimalarials;
- Improve intersectoral actions to address malaria interventions in context with other important socioeconomic and political determinants of malaria including agriculture, fishing, land conflicts, population displacements, porous borders, intense intra- and/or inter-country migration, and scattered and vulnerable populations living in poor housing conditions;
- Enhance active community empowerment and participation, including among indigenous and other target populations, to achieve desired results at all levels of work (grassroots, national, regional, and global);
- Increase political commitment, partnership, and key actions to address malaria prevention and control where the problem is most concentrated, including in high-burden municipalities;
- Consolidate the collaborative actions under the framework of multicountry initiatives (RMEI, Guiana Shield) and other collaborative platforms that facilitate the integration of the joint efforts of strategic allies for the Region (USAID, Global Fund, Inter-American Development Bank, Bill & Melinda Gates Foundation, Centers for Disease Control and Prevention, United Nations Foundation, Clinton Health Access Initiative, Secretaría Ejecutiva del Consejo de Ministros de Salud de Centroamérica y República Dominicana, The Carter Center, Medicines

for Malaria Venture, PATH, University of California San Francisco, Johns Hopkins University, George Washington University, Florida International University, and American Society of Tropical Medicine and Hygiene, among other partners);

- Expand and optimize successful platforms (i.e., Malaria Day in the Americas, Malaria Champions of the Americas, Municipalities for Zero Malaria, PAHO Disease Elimination Initiative) for countries of the Region to engage in a year-round aggressive campaign against malaria, and showcase best practices by facilitating cross-sharing with other regions;
- Also, while the action plan highlights the importance of regional alliances and initiatives and the support of donors and partners, advocacy must strategically focus on multisectoral actions and collaborative approaches that ensure the governance and leadership of the countries and affirm the importance overall health systems strengthening.

**Actions to address gaps in knowledge and evidence that are essential to malaria program implementation and operations:**

- Develop a prioritized operational research agenda and knowledge management strategy connecting research efforts with policy process within the countries, across the Region and global mechanisms in WHO to update policy recommendations in malaria;
- Particular interest should be paid to key research gaps from the perspective of the Region's new commitment to malaria elimination and priority topics based on actual problems in the countries, such as improvements on radical cures and other *P. vivax* biological challenges, insecticide resistance, diagnosis in low-endemic areas, vector control effectiveness with exophilic/exophagic vectors, use of mass drug administration in *P. vivax*, and other elimination accelerators;
- Facilitate linkage of stakeholders (program implementers in the countries, research groups, technical agencies, funders, etc.) toward identifying and bridging evolving knowledge gaps;
- Develop mechanisms to promote research on key knowledge gaps as a dynamic regional research agenda based on priority problems in the countries; and find ways to leverage and connect with policy recommendation processes within the countries, across the Region, and globally (WHO);
- Leverage on the comparative advantage of countries through South-South collaboration, enhancing coordination and knowledge-sharing among malaria professionals and workers in the Region.







# Monitoring and Evaluation

This Plan of Action contributes to the achievement of PAHO's Strategic Plan 2020–2025 impact goal 21 (reduced malaria incidence rate) and impact goal 22 (elimination of malaria), and outcome 4 (response capacity for communicable diseases) and outcome 17 (health systems strengthened to achieve or maintain the elimination of transmission of targeted diseases) (6); and aligns accordingly with technical guidelines and documents developed and consolidated by the WHO Global Malaria Programme, the PAHO Regional Malaria Program and country offices, and various technical partners. The monitoring and assessment of this Plan will be aligned with the Organization's results-based management framework as well as its performance, monitoring, and assessment processes. Progress reports will be developed based on information available at the end of each year. With a view to determining strengths and weaknesses of the overall implementation, causal factors of successes and failures, and future actions, a final evaluation will be conducted on the last year of the plan's implementation.

The baseline and targets for the indicators outlined in the strategic components section of the Plan are subject to agreement between the countries and other stakeholders. PAHO uses annual information shared by the countries through the PAHO/WHO malaria reporting system to assess the progress of activities. PAHO will also engage actively in developing consensus between national and international stakeholders in assessing and monitoring important indicators in various malaria program contexts.







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# Annex A

## **Plan of Action for Malaria Elimination 2016–2020 Final Report / Status Assessment of Indicators** *(as presented to the 59th PAHO Directing Council in September 2021)*

English:

<https://www.paho.org/en/documents/cd59inf8-plan-action-malaria-elimination-2016-2020-final-report>

French:

<https://www.paho.org/fr/documents/cd59inf8-plan-daction-pour-lelimination-du-paludisme-2016-2020-rapport-final>

Portuguese:

<https://www.paho.org/pt/documentos/cd59inf8-plano-acao-para-eliminacao-da-malaria-2016-2020-relatorio-final>

Spanish:

<https://www.paho.org/es/documentos/cd59inf8-plan-accion-para-eliminacion-malaria-2016-2020-informe-final>

The Plan of Action for Malaria Elimination 2021-2025 has been developed in consultation with countries and regional partners as a framework of reference to guide the efforts of countries and the contributions of donors and partners toward the elimination of the disease in the Americas. The Plan subscribes to the goals and pillars of the WHO Global Technical Strategy against Malaria 2016-2030 (GTS), while presenting key elements to address the specific challenges of the Region.

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