

Expanding access to malaria diagnosis and treatment

Region of the Americas



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1. INTRODUCTION

Despite repeated calls and efforts emphasizing the importance of early diagnosis and treatment for malaria elimination in the Americas, significant gaps remain. This is due to weak health systems, financial and operational factors, supply chain problems, human resource challenges, and lack of community engagement in efforts to eliminate the disease in affected areas.

Malaria treatment should be a public good available to affected communities, without barriers. Treatment depends on the availability of reliable diagnosis. Access to diagnosis is therefore the foundation of the entire response to malaria: without diagnosis there is no treatment, no case reporting, no surveillance, no response, and no information to guide vector control. Moreover, without diagnosis there may appear to be no malaria because the disease may be underdetected. Lack of detection and/or late detection of cases undoubtedly continue to be factors that perpetuate malaria transmission in the Region.

Early diagnosis and treatment are the key interventions in any malaria elimination effort in the Americas. The earlier the patient is diagnosed and treated, the lower the probability of parasite transmission and the greater the impact.

Those most in need of these interventions, in remote and rural areas, have the most difficulty accessing malaria diagnosis and treatment services. People often face multiple barriers to malaria services and these barriers are almost always cumulative. They include distance and limited access to transportation, travel costs, security-related factors, work schedules, specific conditions facing irregular workers and undocumented persons, and cultural factors. In addition, some obstacles are inherent to health services and control programs (e.g., staff shortages, time restrictions, irregular services, lack of medicines or diagnostic supplies, delays, and fees for care).

Access to diagnosis can be quickly expanded using rapid diagnostic tests (RDTs), especially in communities that are underserved by routine health services. Optical microscopy and RDTs are the recommended methods for malaria diagnosis. RDTs are simple to use, easy to distribute, and tolerate the high temperatures and humidity of tropical regions. These tests can be used without lengthy or complex training. Local workers and community members can learn to use the tests in a few days.

In some endemic countries in the Americas, this resource remains underutilized. Some countries continue to employ models based on teams of workers who prepare slides and transport the samples to microscopy services, or on active detection during periodic visits to the localities. These strategies do not enable rapid initiation of treatment, leading to continued transmission. Malaria elimination requires that diagnosis and treatment be available without barriers, close to where the affected population lives and works.

In areas with malaria transmission, diagnosis and treatment need to be available as close to people as possible: at the first point of contact with the health system, and in hard-to-reach areas, within the community itself. The Pan American Health Organization (PAHO) therefore proposes a framework of action to improve access to malaria diagnosis and treatment, based on expanding access to diagnosis, including

expanded use of RDTs and immediate comprehensive treatment. This framework considers diagnostic methods and antimalarial drugs to be public goods.

To achieve this change, it will be necessary to involve many more actors from the health system, affected communities, and society in general in malaria diagnosis and treatment. In all areas where malaria is present, this strategy calls for an expansion of the diagnosis-treatment (DT) component of the Diagnosis, Treatment, Investigation, and Response (DT-IR) strategy that PAHO and its partners in the Region have been promoting for malaria elimination in the Americas.

2. OBJECTIVES

The overall objective of this approach is to accelerate efforts toward malaria elimination by increasing access to early diagnosis and treatment.

The specific objectives are to:

- Minimize the barriers that the population faces in accessing timely, quality diagnosis and treatment.
- Reduce the time between diagnosis and the start of treatment.
- Reduce the parasite reservoir in symptomatic infected persons through early treatment.
- Maximize the transmission-blocking strategy by taking early action on gametocytes.
- Decrease the incidence of *P. vivax* relapses.
- Ultimately, disrupt malaria transmission and prevent mortality.

3. STRATEGIC ELEMENTS

These are the strategic elements needed to carry out the proposed actions::

1. Consider antimalarial drugs to be a public good that should be freely available and accessible to all affected communities.
2. Maximize the use of rapid diagnostic tests.
3. Expand diagnosis and treatment in all health units and increase the number of personnel in endemic areas so that these services are available wherever people come into contact with the health system.
4. Expand diagnosis and treatment in communities and through other agents.
5. Implement locally adapted programmatic actions to stimulate demand as the case management services are expanded.
6. Conduct microplanning, surveillance, supervision, and support for an expanded diagnostic and treatment network.

3.1 Consider antimalarial drugs to be a public good available to all communities

A public good is a good that is available to all, one that any individual can independently access free of charge. Malaria-affected populations should have unrestricted access to antimalarial drugs. The best mechanism to discourage self-medication and black-market medicines is to ensure that communities have unfettered access to good-quality medicines at no cost. Expanding access to treatment means expanding access to diagnosis and ensuring the provision of health services, along with a community network with sufficient RDTs and/or microscopes, laboratory materials, and medicines within reach of all affected communities.

This action involves regulatory and policy measures, and the management of purchases and supplies to enable larger-scale operations, for which the following considerations should be taken into account:

- A high-level agreement within each country may be necessary to ensure universal access to free diagnosis and treatment. Furthermore, implementing the proposed actions will require political support.
- Expanding diagnosis and treatment will require a review of policies to ensure adequate stocks of medicines at the local level, and flexibility in current drug regulations governing supply logistics. Regulatory changes and adjustments may need to be made to keep antimalarials available in a wider network of sites for longer periods of time.
- Community access to medicines involves redesigning the supply chain and logistics systems in order to locate and control stocks of antimalarial drugs in networks with many more actors (volunteers, health personnel, and others).
- Managing antimalarials in larger quantities also requires improved pharmacovigilance efforts.

3.2 Maximize the use of rapid diagnostic tests

Expanding access to treatment depends on mass access to parasitological diagnosis. The use of rapid diagnostic tests is recommended in all situations where timely microscopy is not available to guide early initiation of treatment. Significant gaps persist in the implementation of RDTs in the Region of the Americas. Maintaining and strengthening malaria microscopy capacities has been a priority element in PAHO's support to countries and should continue to be a main line of action in malaria elimination efforts. However, microscopy networks are insufficient to ensure the coverage that elimination requires, particularly in remote communities in rural or resource-poor areas. Malaria elimination requires a strategy in which there are no barriers or delays to initiating treatment; in most endemic areas this is only possible with increased use of RDTs. Maximizing their use means maximizing the tool's performance in the endemic areas of the Americas. The highly effective impact of RDTs can only be achieved if treatment is also available, and if this combination is within the reach of all affected communities.

Increased use of RDTs should be accompanied by regulatory and policy changes and by improvements in all aspects of the management cycle, including:

- Actions to ensure selection of the most appropriate RDTs for different epidemiological situations and different users. In addition to aspects related to the circulating species, level of transmission, and operational aspects, special attention should be paid to the high prevalence of deletion of the *PfHRP2/3* gene, which has been detected among *P. falciparum* strains in South American countries, especially in Western Amazonian territories (areas of Peru and Brazil). Ministries of Health should implement the measures recommended by WHO to monitor the presence of this deletion¹ and guide diagnostic and screening strategies for RDTs according to surveillance findings.
- Maximizing the use of RDTs, which involves changes in the scale of procurement, along with improvements in supply chains, policies, warehousing, inventory management, supervision, distribution strategies, and tracking of usage and performance under a quality assurance plan.
- Expanding the use of this tool, which entails greater challenges for a larger-scale operation but can also help optimize detection strategies and refocus resources on field operations.
- Recognizing that more extensive use of RDTs will also require guidelines, procedures, algorithms, and tools for case management decision-making, especially regarding the role of community health workers (CoIVol) in passive screening, adherence to guidelines in case of negative results, and case reporting.
- More funding and better management. The economic advantages of accelerating malaria elimination, rather than simply controlling it, should be a component of advocacy when dealing with decision-makers.

¹ Template protocols to support surveillance and research for *pflhrp2/pflhrp3* gene deletions: <https://www.who.int/publications/i/item/9789240002036>

3.3 Expand diagnosis and treatment, involving all health units and health workers in endemic areas

In countries that have taken on the challenge of elimination, it should be unacceptable for health units in areas with malaria to be unable to diagnose the disease. Although RDTs have been available for more than 20 years and significant progress has been made in their development, production, and prequalification, health units in many of the endemic countries in the Region still have not adopted their widespread use in endemic areas. Today, there is no technical reason preventing a health team in these areas from responding immediately to a malaria case or from managing febrile illnesses of other etiology through early diagnostic exclusion of malaria. In this regard, the following actions are proposed:

- Actively involve all health units in endemic areas in malaria diagnosis and treatment.
- Make policy and regulatory changes to incorporate malaria care (diagnosis and treatment) into routine primary care in endemic areas. This includes regulatory actions, coordination with health services, training, and logistics.
- Equip health workers in the field, public health brigades, and other non-malaria-specific mobile health teams with diagnostic and treatment tools and capacities. The goal is to involve other public health programs and actions that reach remote communities.

This strategic shift alone (limited to the role of the health system and its gaps) could exponentially increase the availability of treatment and leverage countless contacts between communities and health services, which today constitute missed opportunities to treat malaria.

3.4 Expand diagnosis and treatment with the engagement of communities and other stakeholders

This aspect of change involves making malaria elimination a real societal effort in endemic territories. The aim is to mobilize all stakeholders at the local level in order to guide them toward malaria elimination in the territory through concrete actions. Diagnosis and treatment involve concrete actions in which many stakeholders can participate, thanks to available technology; however, policies and legislation are needed to encourage and enable the community to take on roles and responsibilities. The best way to bring treatment closer to hard-to-reach communities and other complex situations may be to put diagnosis and treatment in the hands of properly trained, supervised community members who are connected to the health network. To this end, three aspects should be considered:

- Reactivate and organize programs for rural health promoters and community health agents in endemic areas. The model of paid health promoters covering various public health programs has included malaria care in some countries. In other countries, the role of family or community health worker exists, but not as part of the actual malaria diagnosis and treatment network. Countries should work to address regulatory barriers to enable these stakeholders to diagnose, treat, and provide the logistics and support that programs require, along with mechanisms to establish sustainable primary care strategies (and provide the corresponding incentives for this component), with a programmatic approach.
- Involve all possible stakeholders in the affected communities. This means going beyond the programs and strategies related to community health promoters and community health workers.

These “ColVols” have been a fundamental part of the malaria response in many countries in the Region. The idea is to also recognize many other actors as ColVols (housewives, educators, miners, farmers, traders, religious and local leaders) so that they may bring diagnosis and treatment closer to the population. Countries’ legal and regulatory frameworks need to be reviewed so as to avoid barriers that hinder the role of community members in providing diagnosis and treatment, while strengthening the roles, responsibilities, and structures of the health system. A model needs to be developed so that local malaria managers have the autonomy and tools to rapidly assign or create new diagnostic posts with rapid tests, in response to the epidemiological situation.

- Ambitiously involve other non-community stakeholders: private companies, the non-health public sector, indigenous organizations, the agricultural industry, non-governmental organizations (NGOs), etc., and any public or private entity related to the economic and social processes of the affected population and the dynamics of malaria.

3.5 Locally adapted programmatic actions to stimulate care-seeking behavior

It may not be possible to improve the availability of diagnosis and treatment if there are cultural barriers or other factors that discourage communities from approaching the health system to receive malaria diagnosis and treatment. Therefore, any strategy to expand access to diagnosis and treatment must incorporate strategic actions to stimulate demand. In this regard, it is necessary to differentiate between two types of actions:

- **A programmatic action** is part of a program or strategy—an action that follows a plan and has specific objectives, methods, and funding. The demand induction strategy should have a national technical framework, but rather than being limited to communication materials and messages, it should consist of social mobilization efforts to bring malaria services closer to the communities, making them dynamic actors in disease elimination through a collective and massive early detection and treatment effort.
- **A locally adapted action** refers to content, communication objectives, and methods. In this case, rather than relying on generic messages and communications that are often disconnected from community realities, actions are promoted that involve a working method and a set of tools and capacities to help local teams understand why people are not taking advantage of the services offered, determine the origin of febrile cases, and identify cultural barriers, among others.

3.6 Microplanning, surveillance, supervision, and support for an extended diagnostic and treatment network

The main challenge this strategy poses for the health services and national malaria program is that of maintaining surveillance and ensuring the organization, supervision, logistics, and support for an expanded network of diagnostic and treatment sites. In this context, the following should be noted:

- A key element in improving access to diagnosis and treatment is to analyze and understand the specific challenges and obstacles that the population faces in accessing diagnosis and treatment in each local context. This means the approach must be based on the use of local-level data, while recognizing the need to understand and adapt measures to each specific situation. **Microplanning** refers to organizing the diagnostic network at the local level, based on a more refined analysis of data and context (micro-epidemiology). It is advisable to divide large municipalities into sectors and to delimit operational units (foci or micro-areas), sectors, or clusters of localities that share the same transmission dynamics and that are assigned to the same supervisory team.
- The use and **improvement of information systems** based on individual case data should be promoted as an important element guiding the expansion of diagnosis and treatment. It is also important to monitor key indicators such as the time between symptom onset, testing, and initiation of treatment. Information systems should closely monitor the detection efforts made at the diagnosis points and through the local program. The number of suspected cases tested for malaria should be the main factor guiding the local elimination operation.
- **Simplifying processes:** Surveillance can be maintained and even significantly strengthened if the systems allow for simplified recording and reporting processes and procedures. Simplification is necessary in order to expand surveillance coverage. An example of this is the reporting of negative suspected cases as aggregate data or as individual data, but with only a few variables, so as to ensure surveillance of suspected malaria without unnecessarily overloading the services when recording data, or overburdening the data entry personnel who enter the information in electronic systems.
- Increasing **supervision and support in the diagnostic network:** Supervision should emphasize the use of RDTs and antimalarials. The increase in the number of diagnostic points may indicate a need for more human resources, means of transportation, logistics for supervision, distribution of medications, RDTs, and other supplies.
- Shifting and **adjusting roles and functions:** In many contexts, a change of model can be achieved only by optimizing and revising the routines and functions of existing mobile health teams. In some countries, for example, case detection largely relies on reactive or proactive detection efforts, along with direct supervision of treatment by vector program agents, health inspectors, nurses, or others. The shift to a strategy focused on more fixed diagnostic sites requires changes in the actions of personnel. With treatment permanently available in the communities, field visits can be improved and vector control program staff can play a smaller role in detection and treatment, and can focus more on supervision, supply, quality control, and support of diagnostic sites that use RDTs.
- Use of **new technologies and tools:** The model could also benefit from currently available technologies, such as mobile telephony and changes in the program funding matrix, in order to dedicate resources to communications with the extended network of stakeholders. The aim is to achieve a more efficient interface between the health system and the network of workers in the field, using the tools already employed by the affected populations.

4. RELATION TO THE PLAN OF ACTION 2021-2025

The framework proposed in this strategy for expanded access to diagnosis and treatment addresses three of the objectives for elimination defined in line of action 2 of the Regional Plan of Action for Malaria Elimination 2021-2025:

- **Objective 2.1.** Establish programmatic approaches to ensure early testing, treatment, and investigation of cases, and transform active foci into cleared.
- **Objective 2.2.** Pursue interventions and innovations to accelerate reductions in transmission in key population groups or high-burden areas.
- **Objective 1.1.** Strengthen operational capacity to implement malaria diagnosis.

Similarly, this framework for action is consistent with various objectives of the Plan of Action that should be implemented as supporting elements to achieve elimination:

- **Objective 4.1.** Support integration of malaria activities into public health services.
- **Objective 4.3.** Intra- and inter-sectoral dialogue and collaboration with partners and stakeholders.
- **Objective 1.1.** Strengthen operational capacity to implement malaria diagnosis in various program contexts.
- **Objective 1.2.** Update malaria treatment policies.

5. CHALLENGES AND RISKS

The following is a summary of the challenges and risks involved in this strategy:

- In some contexts, the emphasis on involving communities more actively in diagnosis and treatment may discourage efforts to address gaps in health personnel and services. This may pose a risk, especially in a situation where malaria programs are losing funding and structures.
- Malaria should be integrated into health services without detriment to the coverage that malaria program teams already have achieved in rural areas. Emphasis should be placed on adapting the strategy to each reality.
- Potential limitations in the use and performance of RDTs when making treatment decisions need to be addressed with appropriate measures and with monitoring and analysis tools, especially in low-transmission situations. Similarly, surveillance for PfHRP2/3 deletion should be, as already indicated, a major element to guide the diagnostic strategy in territories affected by this biological threat.
- It should be emphasized that the proposed approach involves additional work for the malaria team (cost, logistics, training, and supply chain), since they will have to oversee and staff an expanded diagnostic and treatment network.
- **Microscopy should continue to be promoted as the best option for malaria diagnosis.** Although this framework for action focuses on improving access in conditions where microscopy is not available, endemic countries should strive to maintain and improve microscopy and quality assurance structures and capacities.

6. NEXT STEPS

6.1 Next steps at the national level

1. Strategic political agreement among key stakeholders in the health system regarding care for the population in areas with malaria.
2. Prioritization of areas, in order to begin implementing changes. Prioritization of municipalities with the highest disease burden (80/20 rule).
3. Pilot implementation while regulatory adjustments are being made:
 - a. Microplanning: Designing the diagnosis and treatment network in the territory, according to each scenario and context (malaria in remote populations, mobile populations, urban malaria).
 - b. Stakeholder mapping and local agreements.
 - c. Supply management and logistics.
 - d. Implementation
 - e. Monitoring and evaluation.

6.2 Next steps at the regional level

1. Promotion of a platform and mechanism for sharing country experiences and joint monitoring.
2. Development of capacities at different levels.
3. Mobilization of external support and coordination of strategic partners.
4. Consolidation of support mechanisms for supply management

All malaria-endemic countries in the Region of the Americas have taken on the challenge of eliminating the disease and have oriented their health programs and strategies on that goal.

This technical note provides guidance on actions to expand access to malaria diagnosis and treatment. Access to diagnosis is the foundation of the entire response to the disease.

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