

MADAGASCAR MALARIA PROFILE

I. ABOUT

Launched in 2005, the [U.S. President's Malaria Initiative \(PMI\)](#) supports implementation of malaria prevention and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, [End Malaria Faster](#), envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 24 countries in sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Madagascar began implementation as a PMI partner country in FY 2008. Please see the [Madagascar Malaria Operational Plan](#) for more information on PMI's approach and investments.

II. CONTEXT

Table 1: General Demographics and Malaria Situation

Population	28,177,162 (National Institute of Statistics, [INSTAT], 2021)
Population at risk of malaria	28,177,162 (INSTAT, 2021)
Malaria prevalence	7.5% (INSTAT, Demographic and Health Survey [DHS] 2021)
Malaria incidence/1,000 population at risk/year	83.2 (National Malaria Control Program [NMCP] annual report, 2021)
Peak malaria transmission	December to April

STRATIFICATION

Table 2: Epidemiologic Stratification of Malaria Infection Risk, 2017

(translated from French version, 2016 HMIS data)*

Cases per 1,000 inhabitants	Zone	Objective	Interventions	No. Districts Targeted	Population (%)	Rapid Response
≥100 (High)	Control (Incidence ≥ 200/1,000 or Incidence ≥ 100 with Vulnerability index ≥ 4)	Reduce trans- mission below 100	ITNs, IPTp, CM, Surveillance, Cross-cutting interventions (SBC, M&E)	25	3,466,336 (14)	IRS if malaria increase/ outbreak or MDA if outbreak
	Control (Incidence < 200 or Incidence ≥ 100 with Vulnerability index < 4)	Reduce transmission below 100	ITNs, IPTp, CM, Surveillance, cross- cutting Interventions (SBC, M&E)	14	1,751,470b(7)	
50-100 (Moderate)	Control	Reduce transmission below 50	ITNs, IPTp, CM, Surveillance, cross- cutting Interventions (SBC, M&E)	25	5,366,047 (22)	
10-50 (Low)	Control	Reduce transmission below 10	ITNs, IPTp, CM, Surveillance, cross- cutting Interventions (SBC, M&E)	29	6,923,542 (29)	
1-10 and TP ≥5% (Very Low)	Control	Move towards pre- elimination	ITNs, IPTp, CM, surveillance, cross- cutting interventions (SBC, M&E)	13	3,132,994 (13)	
1-10 and TP < 5% (Very Low)	Pre- elimination	Move towards elimination	IRS for elimination, CM, malaria foci surveillance and targeted treatment and cross-cutting	3	1,024,444 (4)	

Cases per 1,000 inhabitants	Zone	Objective	Interventions	No. Districts Targeted	Population (%)	Rapid Response
			interventions			
< 1 (Free)	Elimination	Elimination	Active surveillance, case investigation around index cases; low dose primaquine**, cross-cutting interventions	5	2,484,673 (10)	

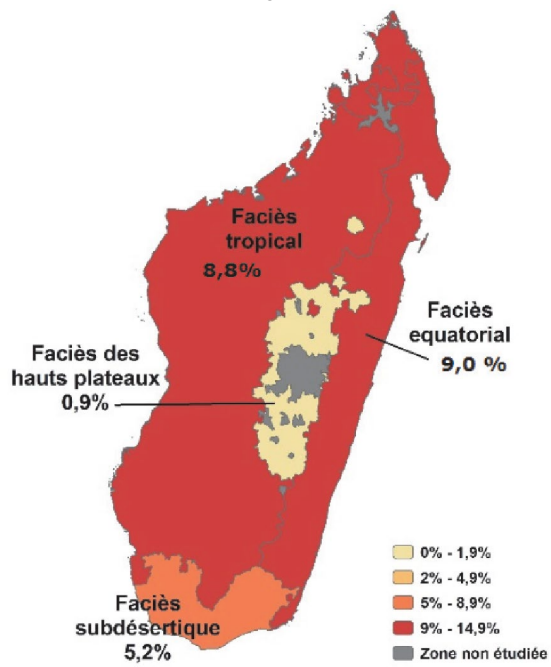
CM: Case management; SBC: Social and behavior change; M&E: Monitoring and evaluation; ITN: Insecticide-treated mosquito net; IPTp: Intermittent preventive treatment for pregnant women; IRS: Indoor residual spraying; MDA: Mass drug administration

*When this table was developed, IRS was prioritized for elimination settings as the country was piloting the impact of IRS in higher-burden settings. Currently the NMCP prioritizes IRS for transmission reduction in high-burden areas (National Strategic Plan [NSP], 2018-2022, version revised in 2020, p. 43); however, the document that includes this table has yet to be updated to include IRS in high/moderate transmission settings.

**When table was developed, low-dose primaquine was planned for elimination settings only.

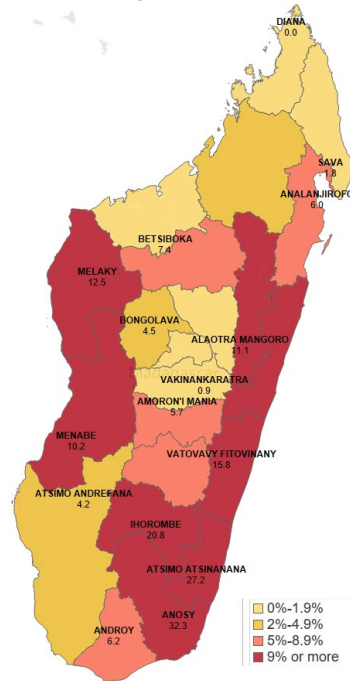
Figure 1: Prevalence Maps

Malaria parasite prevalence by microscopy among children 6 to 59 months of age.



Source: Malaria indicator survey (MIS), 2016

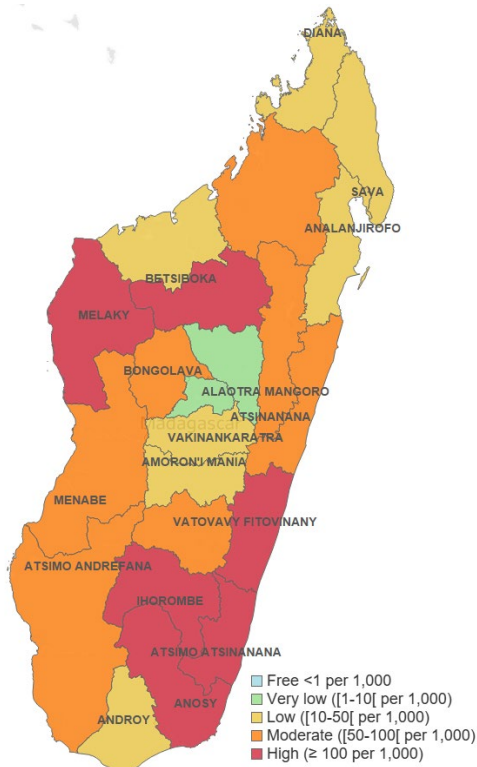
Malaria prevalence by RDT among children 6 to 59 months of age.



Source: Demographic and Health Survey (DHS), 2021

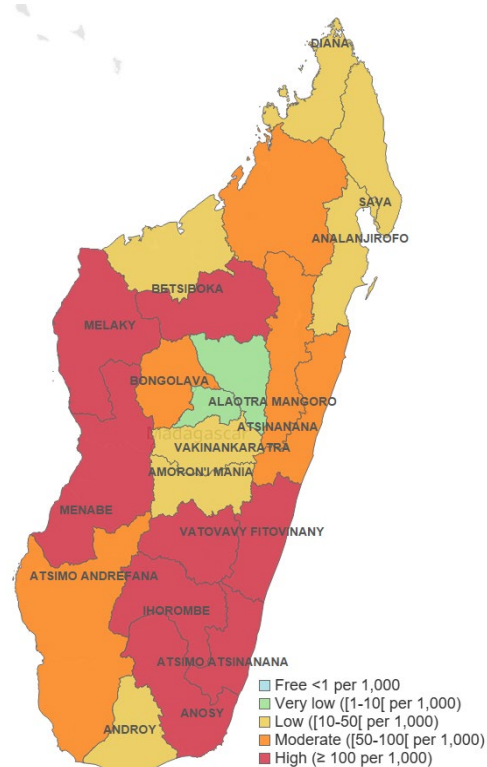
Figure 2: Incidence Maps

Malaria incidence map 2020



Source: DHIS2, 2020

Malaria incidence map 2021



Source: DHIS2, 2021

Table 3: Malaria Parasites and Vectors

Principal Malaria Parasites	<i>Plasmodium falciparum</i> , <i>P. vivax</i>
Principal Malaria Vectors*	<i>An. gambiae</i> s.s., <i>An. arabiensis</i> , and <i>An. funestus</i>

*See **Entomological Monitoring** section of the Malaria Operational Plan for more details on vector bionomics and insecticide resistance and **Indoor Residual Spraying** section for details on residual efficacy.

COUNTRY HEALTH SYSTEM

The Government of Madagascar envisions that “by 2030, the entire population will be healthy, live in a safe environment, and have a better and more productive life.” In 2020, the Ministry of Public Health developed a new national health sector development plan (*Plan du développement du secteur santé* [PDSS]) with four objectives for 2020-2024: (1) strengthening promotional, preventative, and curative interventions, and preparedness to respond to health emergencies; (2) improving equity, availability, and utilization of quality health services; (3) ensuring availability of resources and efficient

management for effective and resilient health systems; and (4) enhancing the program management system for accountability at all levels of the health system.

To meet these objectives, the Madagascar health system is organized in four tiers for service delivery; where malaria services are provided, a fifth tier exists related to malaria laboratories:

The first tier is composed of 35,000 community health workers (CHWs). Two CHWs are assigned to each village to provide integrated community case management (iCCM), including malaria testing with malaria rapid diagnostic tests (mRDTs) and treatment for uncomplicated cases among children less than 5 years of age who live more than 5 km from a basic health center or *centre de santé de base* (CSB); pre-referral treatment for severe cases; and social and behavior change (SBC) for prevention and care-seeking and sensitization for antenatal care (ANC) and IPTp. PMI supports 11 of Madagascar's 23 regions with training, supportive supervision, and supplies.

The second tier is made of 2,710 public CSBs (CSB1 [38.2 percent] and CSB2 [61.2 percent]) and over 800 officially recognized private health facilities (private CSB1 and CSB2) that provide a defined package of minimum activities for malaria. CSB1, which are generally managed by a nurse, and CSB2, which are managed by a doctor, offer packages that are complementary to those offered by CHWs: clinical iCCM; testing with mRDTs and microscopy and management of uncomplicated and severe malaria cases among people of all ages; pre-referral treatment if on-site treatment is not possible for severe malaria cases, ANC and IPTp, and SBC.

The third tier is composed of level 1 and level 2 district referral hospitals, and the fourth tier is composed of regional referral hospitals and university hospitals, which all currently provide services similar to those of the CSB2: malaria diagnosis by mRDT and microscopy, and treatment of uncomplicated and severe malaria cases. They also provide microscopy for hospitalized patients on days 3, 7, and 14 following hospitalization per national standards (NMCP norms and directives for malaria case management, January 2021).

Specific to malaria, there are two national referral labs for malaria at the central level: The NMCP national referral lab and the malaria unit at the Institut Pasteur de Madagascar. These are the only two labs able to conduct advanced analysis, including molecular analysis, polymerase chain reaction (PCR), and serology. An assessment of lab capacity will be conducted by NMCP in calendar year (CY) 2022 with support from PMI that could lead to a decentralization plan for advanced malaria analyses (e.g., molecular and PCR).

Malaria CM is offered nationwide, in all 114 health districts, across the four tiers of the health system, while IPTp is offered in only the 101 control districts per the national malaria strategy. Health care providers (HCPs) at CSBs train and supervise the CHWs while the health district management team provides support (e.g., training and supervision) to HCPs at CSB 1 & 2.

The NMCP works in close collaboration with the Ministry of Public Health's Directorate of Family Health (*Direction de santé familiale* or DSFa) on Malaria in pregnancy (MIP). DSFa provides policy guidance for the implementation of ANC while NMCP focuses on provision of malaria services for pregnant women, including IPTp and malaria CM. They coordinate along with other Roll Back Malaria partners within the MIP technical working group. The working group provides a strategic and technical framework for the implementation of different MIP approaches, supports the review and updating of technical guidance and related training, supports advocacy and resource mobilization, and identifies best practices to bring to scale.

Madagascar faces a shortage of human resources, which adversely impacts the access/distance to qualified staff. Madagascar has one doctor per 13,018 population (compared with World Health Organization's (WHO) recommendation for at least one doctor for 10,000 inhabitants), one nurse for 9,497 inhabitants, and one midwife for 10,200 inhabitants (WHO recommends one general nurse for 3,000 inhabitants and one midwife for 5,000 inhabitants). Less than 45 percent of the health care workforce practices in rural areas where >65 percent of the population lives. Consequently, >50 percent of CSB1 have just one agent (the HCP) at post and >50 percent of CSB2 do not have a medical doctor assigned, as recommended. This has impacted universal access to core malaria intervention (PDSS, 2020).

According to the 2021 DHS, 55 percent of children less than 5 years of age with a febrile illness in the previous two weeks sought care from a health provider. CHWs offer defined packages, including iCCM to people living more than 5 km from CSBs. Institutionalization of CHWs to provide iCCM, with extension of malaria community case management (mCCM) to all age groups, is planned by the MOH and NMCP to improve access to malaria care. This is critical since more than 60 percent of the population lives more than 5 km from a health facility and 35 percent live >10 km from a health facility.

In Madagascar, the **private sector** plays a large role in key health areas, including commodities and care provision. Madagascar has more than 3,500 private facilities (hospitals, clinics, and CSB) [USAID SHOPS Health Facility Census]. A malaria market assessment funded by PMI in 2020 showed a diversity in terms of market share for antimalarial products (see Table 3 below).

Table 4: 2020 Malaria Market Share Assessment

Commodity	Market share	
	Public sector	Private sector (for- and not-for-profit)
mRDT	70%	30%
ACT	42%	58%
SP	90%	10%
Injectable artesunate	97%	3%

These results have informed the malaria total market assessment road map with a goal to increase the private sector share of the malaria market. These efforts have led to a private pharmacy registering and importing over 20,000 vials of artesunate. According to a 2018 survey (SHOPS plus, 2018), when seeking care for children under 5 years of age with a fever, use of the public sector was similar in urban and rural areas (about 30 percent) while use of the private sector was more common in urban areas (29 percent vs. 8 percent).

The Government of Madagascar allocated only 6.7 percent of its budget to health in 2019, failing to meet the WHO standard and Abuja Declaration commitments. Therefore, the health budget, including for malaria, is heavily dependent on donors. Currently, PMI and the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) provide most of the malaria funding. Other donors include WHO, UNICEF, and international non-governmental organizations (NGOs). Based on MOH directives, malaria commodities should be provided free of charge across all service delivery points.

There has not been a recent NHA survey conducted in Madagascar, though [out-of-pocket expenditures as a percentage of total health expenditures](#) are high and rising (from 28.9 in 2018 to 32.5 in 2019). (There are very few mechanisms to pool risk in the country, with low membership in ongoing community-based mechanisms, such as *mutuelles*. The MOH estimates that 14 percent of the population is covered through some type of financial protection, such as insurance (PDSS, 2020).

Madagascar has separate public and private sector health supply chains (commercial and non-commercial). The public sector supply chain is managed the same way as the health pyramid of the country:

Central level: Managed by the Directorate of Pharmacy (DPLMT), in charge of providing direction, guidance, and supervision of the peripheral level in terms of stock inventory management, good storage practices, Logistics Management Information System (LMIS), and capacity building through training and coaching of supply chain actors. DPLMT also oversees quantification and resource mobilization to procure commodities. Essential health commodities are managed by the central medical store, SALAMA, which is mandated to procure and distribute essential medicines and consumables to the district levels. Donors procure commodities primarily for vertical programs like malaria, TB, and HIV, and they contract SALAMA to store and distribute the products to the peripheral level. Currently, donors are procuring 98 percent of malaria commodities, which are managed in a common basket after arriving at SALAMA.

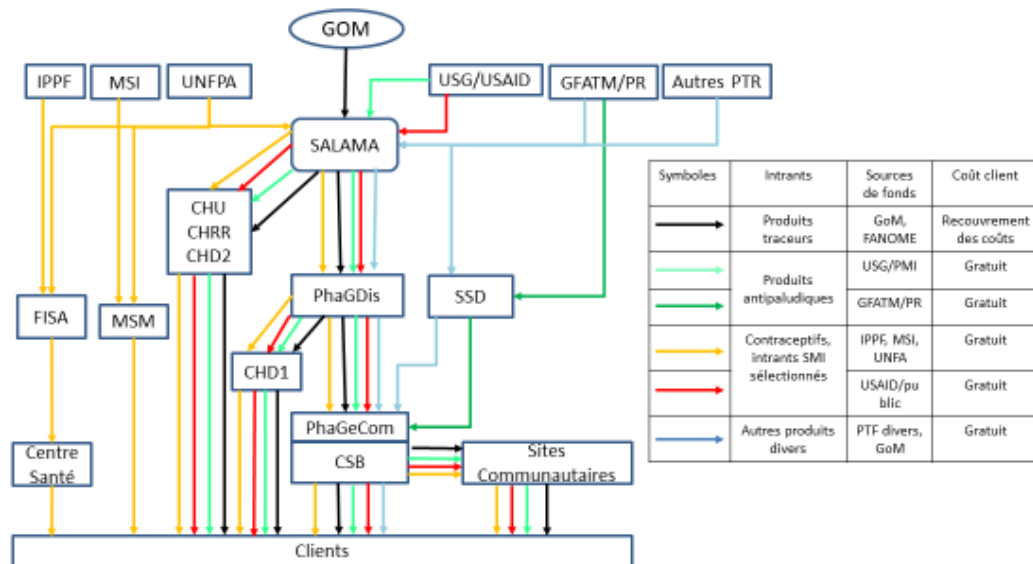
Intermediate level: Led by 23 *Directions régionales de la santé publique*, which are present in each region of Madagascar and cover the 114 districts. Each district has a pharmacy (*pharmacie de gros du district* or Pha-G-Dis); one district has two Pha-G-Dis due to security and geographic distance. The Pha-G-Dis are essentially managed by a local NGO contracted by the DPLMT to ensure that essential commodities are available, stored, and distributed to the commune level. The 115 Pha-G-Dis manage malaria commodities, including storage, reporting consumption and stock on hand on a monthly basis, and ordering commodities on a quarterly basis to resupply the commune level. The Pha-G-Dis submit their orders to NMCP using harmonized report-ordering (*rapport-bon de commande*) developed by DPLMT in collaboration with stakeholders. Once validated, purchase orders are issued to SALAMA to transport the approved quantities to the 115 Pha-G-Dis in compliance with the SALAMA distribution schedule, taking into consideration geographic accessibility. The hard-to-reach districts are supplied every six months, while more accessible districts receive distributions quarterly.

Peripheral level: Managed by nearly 2,700 CSB and approximately 18,000 community sites (staffed by 35,000 CHWs). The peripheral providers estimate their needs for pharmaceutical products to test and treat diseases, including malaria. The CSB and CHWs submit orders every two months to the Pha-G-Dis via *rapports-bons de commande* covering consumption, available stock, and quantification of estimated needs. Currently, the CSB selects products from the Pha-G-Dis for their own needs and for the associated CHWs. In hard-to-reach communities, USAID/PMI is scaling up drone delivery of vaccines and essential medicines.

In total, 121 **hospitals** have pharmacies to dispense medicines to beneficiaries and complement the health centers with referral care. The hospital pharmacies order essential health commodities from SALAMA on a quarterly basis and can also procure commodities from private sector wholesalers.

The private sector supply chain is managed independently with minimal supervision by the MOPH. Most medicines and pharmaceutical products are imported from international vendors and by wholesalers registered in Madagascar and supervised by the *Direction de l'Agence des médicaments de Madagascar* of the MOPH. They distribute their products through private retail pharmacies (*pharmacies d'officine*) and drug depots (*dépôts des médicaments*) operating in the 23 regions of Madagascar. Non-profit faith-based organizations can procure products directly from SALAMA or from private wholesalers.

Figure 3: Public Sector Supply Chain in Madagascar



*CSB=Centre de santé de base (basic health facility); GOM=Government of Madagascar; IPPF=International Planned Parenthood Federation; MSI=Marie Stopes International; FISA=Fianakaviana Sambatra (Fianakaviana Sambatra (subsidiary of International Planned Parenthood Federation); MSM= Marie Stopes Madagascar; SSD=Service de santé de District (District health Service); PTF=Partenaire technique financier (financial technical partner).

Health Information System

In Madagascar, the Health Information System comprises two systems: the routine health information System and the Integrated Disease Surveillance and Response system (IDSR). The data that feed the Health Information System come from three different levels: hospital data (at district level), CSB (at facility/commune level) and the community health workers (at community level). Routine data are submitted monthly through paper-based forms and entered into the District Health Information System 2 (DHIS2) data repository at the district level after data validation. All 114 health districts

currently use DHIS2. Electronic reporting of routine data at the peripheral level was piloted in 2021 and will be progressively extended throughout the country.

IDSR data are submitted on a weekly basis. Less than half of CSB report through the electronic surveillance system. The rest report on paper-based forms that are entered by the district into an Excel-based template, which is later merged and managed at the central level.

Madagascar summarizes and shares health data regularly. IDSR data are disseminated during the weekly extended Roll Back Malaria meeting where malaria trends, malaria mortality, and other key malaria indicators for all 114 districts are discussed and shared in the form of a bulletin. Even though the reporting rate for the IDSR data remains low (less than 50 percent), the bulletin is used to guide NMCP decisions and interventions where data are available.

Additionally, data from the routine system are reviewed during quarterly data review meetings. Routine data are disseminated through a quarterly malaria bulletin under the lead of the NMCP.

Regional and district staff conduct quarterly integrated data review meetings in which malaria data are discussed. Monthly review meetings are held at the facility level between the facility provider and CHWs to coordinate integrated interventions and review data and performance.

Data use is still a challenge in Madagascar because issues with data quality and reporting, particularly at the community level where staffing and supervision are insufficient, negatively impact the health information system. To strengthen data use, a DHIS2-based malaria dashboard was piloted in one district in 2021 and extended to an additional district in 2022.

Implementation of digital health is also a challenge in Madagascar because many non-interoperable systems remain in use. The digital health profile created in 2021 at the community level showed that Madagascar is still at a low level of maturity. However, the MOH has made efforts since 2021 to create an integrated information platform to contain routine, IDSR, and commodity data.

OTHER CONTEXTUAL INFORMATION

Several factors affect health outcomes in Madagascar. Impacts of climate change manifest regularly as cyclones in the western and eastern areas, and drought in the south. These hazards have negative impacts on health outcomes in general and may particularly impact malaria, such as when drought caused populations to flee the Androy Region, where malaria incidence is low, to Taolgnaro, where malaria incidence

is high. In terms of politics, since its independence in 1960, Madagascar has experienced bloody coups d'état almost every decade, which slows its development. Since 2014, when the U.S. government resumed official collaboration with the Government of Madagascar, six ministers have run the MOH resulting in frequent changes in priorities and staff turn-over at the Directorate level. Finally, the government-led COVID-19 response and management of the Global Fund grant has revealed some issues with mismanagement.

Traditional beliefs and practices and social and cultural norms affect health-seeking and other health-related behaviors. In some regions of Madagascar, mothers prefer self-medication and medications that traditional healers provide because they are perceived as “natural” or as given “through the ancestors.” Many children are not taken to professional providers for diagnosis and treatment of illness. Travel distance, cost and poor perceived quality of care at health care facilities are key determinants in caregivers delaying care-seeking in the formal health care system in both rural and urban areas. However, overall, Madagascar has a strong culture of ITN use, with the highest ITN use:access ratio of any PMI country (see [Breakthrough Action+Research](#)). Barriers to improving ANC and IPTp coverage include distance from health facilities, costs of ANC services (e.g., iron-folate tablets and mebendazole, which are part of the national cost-recovery scheme and may pose a financial burden for pregnant women), and limited knowledge among pregnant women regarding the importance of IPTp.

III. NMCP STRATEGIC PLAN

The current malaria NSP covers 2018–2022. Its vision is to eliminate malaria from Madagascar through universal access to effective and adapted malaria control measures. After the midterm review of the NSP in 2020, the NMCP adjusted the following key objectives of the NSP: by 2022, reduce malaria mortality by one-third and malaria morbidity by 50 percent compared to 2018 levels.

Malaria rates are heterogeneous across Madagascar, with heterogeneity seen within and between regions, districts and even communes. Therefore, the current NSP advocates for interventions targeted to the local epidemiology. In higher-burden zones, strategies focus on control whereas in low-burden zones, the focus is on elimination activities. The malaria elimination strategy 2019–2022 aims to ensure prompt and correct management of every malaria case and to detect, notify, investigate, record, and respond to every case. It also aims to protect high-risk populations and to ensure that the entire population adopts favorable behaviors. The number of elimination districts (≤ 1 case/1,000 people) increased from nine in 2017 to 13 in 2020 and remained the same in 2021. PMI is supporting the NMCP in implementing the elimination plan in three elimination districts (Antsirabe II, Antsiranana I, and Faratsiho) and plans to add

elimination activities to two new districts with FY 2023 funds. However, malaria cases in the country nearly doubled between 2019 and 2020 and increased by another 350,000 cases in 2021. Much of the increase was driven by clusters focused in 40 districts (including 21 PMI-supported districts). Because the NMCP is planning to review the malaria program and develop a new strategy by the end of CY 2022, there is an opportunity to review and adjust stratification and tailored strategies to better address the current transmission dynamics.

IV. KEY MALARIA DATA

EVOLUTION OF KEY SURVEY-BASED MALARIA INDICATORS

Table 5: Key Survey Indicators

Indicator	MIS 2013	MIS 2016	MICS 2018	DHS 2021*
% Households with at least one ITN	69	80	78	69
% Households with at least one ITN for every two people	29	44	41	30
% Population with access to an ITN	48	62	62	n/a
% Population that slept under an ITN the previous night	55	68	56	n/a
% Children <5 years of age who slept under an ITN the previous night	62	73	62	56
% Pregnant women who slept under an ITN the previous night	62	69	61	55
% Children <5 years of age with a fever in the last two weeks for whom advice or treatment was sought	54	56	48	45
% Children <5 years of age with a fever in the last two weeks who had a finger or heel stick	13	16	13	20
% Children receiving an ACT among children <5 years of age with a fever in the last two weeks who received any antimalarial drug	54	17	29	55
% Women who attended 4 ANC visits during their last pregnancy	n/a	n/a	51	60

Indicator	MIS 2013	MIS 2016	MICS 2018	DHS 2021*
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	10	15	31
<5 mortality rate per 1,000 live births	n/a	n/a	59	75
% Children <5 years of age with parasitemia by microscopy	9	7	n/a	n/a
% Children <5 years of age with parasitemia by RDT	10	5	n/a	8

DHS: Demographic and Health Survey; MICS: Multiple Indicator Cluster Survey; MIS: Malaria Indicator Survey
 *Preliminary report

Figure 4. ITN Use:Access Ratio Map

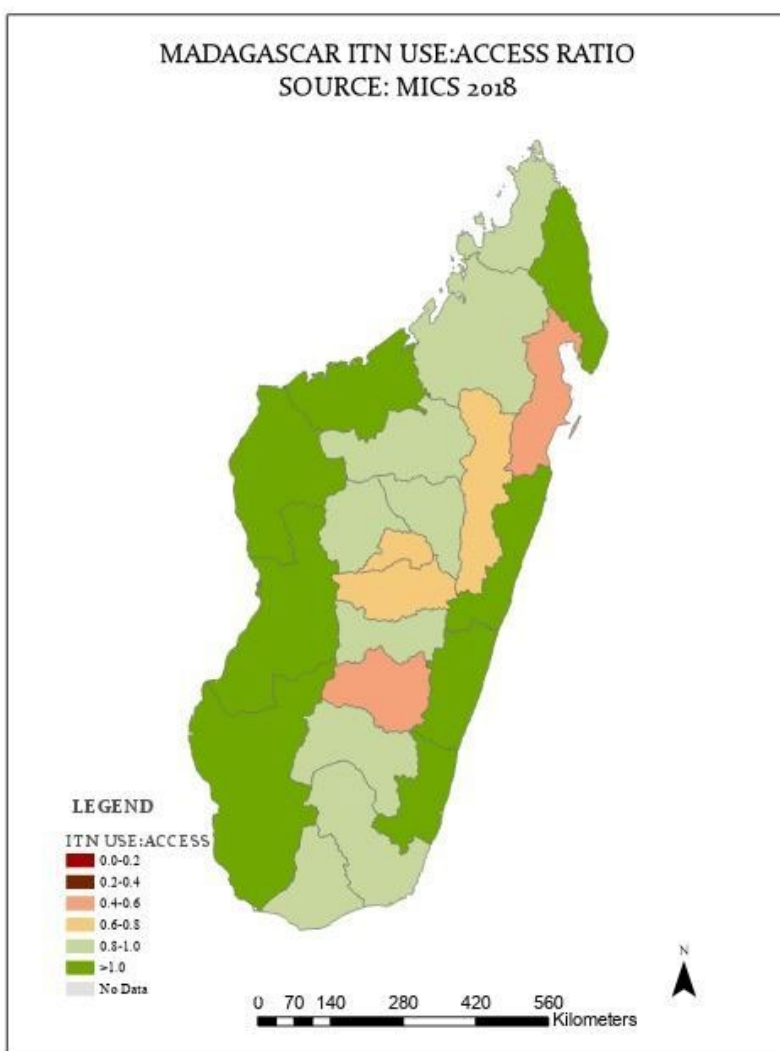


Table 6: Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems

Community-level data are not integrated into the broader HMIS system, so these numbers only include facility-level data.

Indicator	2017	2018	2019	2020	2021
# All-cause patient consultations	5,188,479	5,323,788	7,229,157	6,643,045	10,223,382
# Suspect malaria cases ¹	2,181,219	2,606,443	3,183,805	3,970,573	4,771,328
# Patients receiving diagnostic test for malaria ²	1,974,518	2,290,797	2,855,995	3,798,824	4,567,444
Total # malaria cases ³	N/A	N/A	N/A	N/A	N/A
# Confirmed cases ⁴	795,527	965,390	991,740	1,950,471	2,343,709
# Presumed cases ⁵	N/A	N/A	N/A	N/A	N/A
% Malaria cases confirmed ⁶	N/A	N/A	N/A	N/A	N/A
Test positivity rate (TPR) ⁷	40%	42%	35%	51%	51%
Total # children <5 years of age malaria cases ⁸	266,222	309,331	318,489	618,242	720,179
% Cases in children <5 years of age ⁹	33%	32%	32%	32%	31%
Total # severe cases ¹⁰	27,385	34,845	37,306	65,707	78,723
Total # malaria deaths ¹¹	629	927	657	674	544
# Facilities reporting ¹²	3,085	3,156	3,400	3,495	3,360
% Data completeness ¹³	95%	95%	94%	97%	97%

1 Number of patients presenting with signs or symptoms possibly due to malaria (e.g., fever); 2 RDT or microscopy, all ages, outpatient and inpatient; 3 Total reported malaria cases; all ages, outpatient and inpatient, confirmed and unconfirmed cases; 4 Diagnostically confirmed; all ages, outpatient and inpatient; 5 Clinical/presumed/unconfirmed; all ages, outpatient and inpatient; 6 # confirmed cases divided by total # cases; 7 Confirmed cases divided by # patients receiving a diagnostic test for malaria (RDT or microscopy); 8 Outpatient and inpatient, confirmed and unconfirmed; 9 Total # children <5 years of age cases divided by total # of cases; 10 Severe cases means hospitalized for malaria; 11 All ages, outpatient, inpatient, confirmed, and unconfirmed; 12 Total # of health facilities reporting data into the HMIS/DHIS2 system that year; 13 # monthly reports from health facilities divided by # health facility reports expected (average for the calendar year).

Table 7: Disaggregated Community-Level Data

Indicator	2019	2020	2021
# Patients receiving diagnostic test for malaria from a CHW	39,124	77,301	359,053
Total # of malaria cases reported by CHWs ¹	21,399	34,959	191,558
% of CHW reported cases (among total malaria cases) ²	2.1%	1.8%	7.5%

1 Includes all ages, confirmed and unconfirmed.

2 Total # confirmed malaria cases reported by CHWs/(Total # confirmed malaria cases in previous table + Total # confirmed malaria cases reported by CHWs).

Table 8: Key Elimination Indicators

Indicator	2019	2020	2021
Total # of districts	114	114	114
# of districts designated for elimination	13	13	13
% of districts pursuing elimination	13	13	13
Test Positivity Rate (TPR)	2%	5%	6%
Proportion of cases investigated	0.7%	21.5%	11.4%
Proportion of foci classified	N/A	N/A	N/A

V. OTHER IMPLEMENTATION INFORMATION

Table 9: Results of Durability Monitoring

Site/Net Type	Survey and Time Since Distribution (months)	Attrition to Wear and Tear (%)	Nets in Serviceable Condition (%)	Optimal Insecticidal Effectiveness in Bioassay (%)
Farafangana (DawaPlus 2.0)	Baseline (1.3)	0.2%	99.4% (N=488)	96.7%
	12m (12.5)	1.7%	83.6% (N=347)	3.3%
	24m (25.9)	17.5%	64.6% (N=223)	0.0%
	36m (35.2)	39.2%	55.1% (N=127)	23.3%
Bekily (DawaPlus 2.0)	Baseline (1.4)	0.0%	100.0% (N=408)	86.7%
	12m (12.5)	4.3%	83.0% (N=264)	16.7%
	24m (25.9)	39.4%	89.2% (N=130)	6.7%
	36m (35.1)	58.5%	87.5% (N=56)	50.0%
Maintirano (DawaPlus 2.0)	Baseline (1.1)	0.3%	100.0% (N=335)	95.5%
	12m (12.6)	0.5%	89.1% (N=165)	16.7%
	24m (25.9)	5.2%	74.7% (N=79)	3.3%
	36m (35.2)	14.1%	46.5% (N=43)	16.7%
Fort Dauphin (PermaNet 2.0)	Baseline (N/A)	N/A	N/A	N/A
	12m (12.7)	4.1%	86.2% (N=312)	10.0%
	24m (25.9)	26.9%	67.1% (N=167)	3.3%
	36m (35.2)	45.4%	74.0% (N=73)	43.3%

Insecticidal effectiveness of the ITNs distributed in 2018 decreased precipitously after baseline analysis. Recipients often continued using ITNs until they were markedly torn.

Table 10: Summary of Completed Therapeutic Efficacy Studies

Year	Site	Treatment arm(s)	Efficacy (PCR-corrected adequate clinical and parasitological result) for each drug at each site
2018 ¹	Ankazomborona	AL	100%
2018 ¹	Ankazomborona	ASAQ	100%
2018 ¹	Matanga	AL	95%
2018 ¹	Matanga	ASAQ	98%
2020	Ankazomborona	AL	100%
2020 ¹	Ankazomborona	ASAQ	100%
2020	Antsenavolo	AL	97.7%
2020	Antsenavolo	ASAQ	98.9%
2020	Matanga	AL	89.9%
2020	Matanga	ASAQ	100%
2020	Vohitromby	AL	91%
2020	Vohitromby	ASAQ	97.8%

PCR=polymerase chain reaction; AL=artemether-lumefantrine; ASAQ=artesunate-amodiaquine;

DP=dihydroartemisinin-piperaquine; TBD=to be determined

Both AL and ASAQ have therapeutic efficacies above the 90 percent WHO recommended threshold and are well-tolerated in Madagascar.

1 Dentinger, C.M., Rakotomanga, T.A., Rakotondrandriana, A. et al. [Efficacy of artesunate-amodiaquine and artemether-lumefantrine for uncomplicated Plasmodium falciparum malaria in Madagascar](#), 2018. Malar J 20, 432 (2021). <https://doi.org/10.1186/s12936-021-03935-4>

VI. KEY POLICIES

Table 11: Policies in Madagascar

National Strategic Plan (2023-2027)	
National SM&E Plan (2023-2027)	
National Digital Health Strategy (2016-2019)	
National Social Behavior Change/Communication Strategy (2023-2027)	
National Supply Chain Strategy/Master Plan (2017)	
National Vector Control Strategy and/or Integrated Vector Management Plan	
Malaria Case Management Policy (2021)	
What is/are the first-line treatment(s) for uncomplicated <i>P. falciparum</i> malaria*?	ASAQ
What is/are the second-line treatment(s) for uncomplicated <i>P. falciparum</i> malaria*?	AL
What is/are the first-line treatment(s) for uncomplicated <i>P. vivax</i> malaria?	ACT+15 days of Primaquine (not fully implemented. Physicians hesitate because there is no available data on G7PD).
What is the first-line treatment for severe malaria?	Artesunate inj
In pregnancy, what is the first-line treatment for uncomplicated <i>P. falciparum</i> malaria in the <u>first trimester</u> ?	ACT
In pregnancy, what is/are the first-line treatment(s) for uncomplicated <i>P. falciparum</i> malaria in the <u>second and third trimesters</u> ?	ACT
What is/are the first-line treatment(s) for <i>P. vivax</i> malaria during pregnancy?	Not mentioned in the treatment guidance
In pregnancy, what is the first-line treatment for severe malaria?	Artesunate inj
Is pre-referral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)?	Yes, but put on hold by MOH, following the WHO recommendation

Is pre-referral treatment of severe disease with rectal artesunate recommended for community health workers?	Yes, but put on hold by MOH, following the WHO recommendation
Community Health Policy (updated Oct 2022)	
What is the # of CHWs currently providing iCCM?	26,303
What is the country's target for the number of CHWs providing iCCM?	35,000
What percent of the country's target is met?	75%
Does the country have a policy that enables the routine, regular payment of salaries/stipends for CHWs?	No. Discussion ongoing with MOH and stakeholders
Do CHWs have the authority to test and treat all ages for malaria?	In pilot area (operational research and ProCCM)
Prevention of MIP Policy (2021)	
At what gestational age is the first dose of IPTp-SP to be given to pregnant women according to the national guidelines for malaria and maternal and child health?	Starting at the second semester
Do the national ANC guidelines reflect the WHO 2016 recommendation of 8 ANC scheduled contacts (plus one additional contact for early initiation of IPTp at 13-16 weeks)? If not, how many ANC contacts are recommended?	Yes
What is the status of training ANC providers on the WHO recommended 8+ contacts?	Partially done
Have HMIS/DHIS2 and ANC registers been updated to include 8+ contacts?	Yes
Are IPTp data collected as single months where the January 2022 data represent the number of doses administered in January 2022, or cohort data, representing the cumulative data from pregnancies which began 6 months prior?	As single months data
Is ANC/IPTp provided by facility staff conducting ANC outreach to communities?	Yes
Can CHWs deliver IPTp and if so, which specific cadres and beginning with which dose?	Yes, as a pilot study. CHW are allowed to give IPTp since the second dose.

VII. PARTNER LANDSCAPE

Table 12: Partner Landscape

Partner	Key technical interventions	Geographic coverage	Funding amount or in-kind contribution	Timeframe
PMI	<ul style="list-style-type: none"> • Support to vector control activities (ITN mass campaign, IRS, larval source management) • Procurement of national needs for malaria commodities • Training and supportive supervision • SBC • Operational research • Elimination 	<ul style="list-style-type: none"> • National 	\$26,000,000	Yearly
Global Fund	<ul style="list-style-type: none"> • Support for nationwide bednet mass campaign • Procurement of national needs for malaria commodities • Training and supportive supervision • Mass drug administration 	<ul style="list-style-type: none"> • National 	\$12,227,553	Current grant covers 2021 to 2024
Government of Madagascar	<ul style="list-style-type: none"> • Procurement of national needs for malaria commodities • Outbreak response • SBC 	<ul style="list-style-type: none"> • National 	N/A	Yearly
Principality of Monaco		<ul style="list-style-type: none"> • National 	~ \$17,000	Yearly
United Nations	<ul style="list-style-type: none"> • Mass drug administration • Technical assistance 	<ul style="list-style-type: none"> • National 	N/A	N/A