LAST UPDATED: 06/08/2023

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 274 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 focus country in fiscal year (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	29,036,222 (National Institute of Statistics [INSTAT], 2022)
Population at risk of malaria	29,036,222 (INSTAT, 2022)
Malaria prevalence	7.5% (INSTAT, Demographic and Health Survey [DHS], 2021)
Malaria incidence/1,000 population at risk	57.0 (National Malaria Program [NMP], 2022)
Peak malaria transmission	December–April

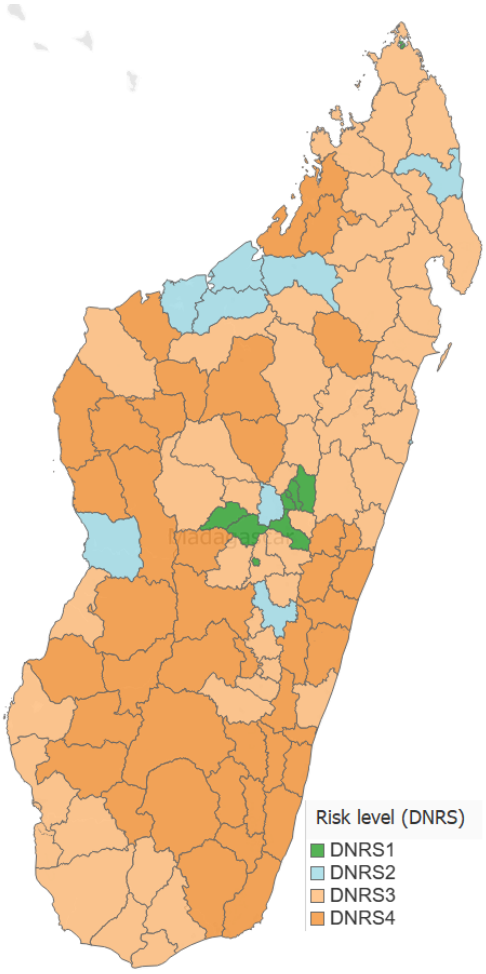
STRATIFICATION

As part of the anticipated strategic plan for malaria 2023–2027, a new district-level stratification has been under development since September 2022. The version as of July 20, 2023 is included below, although it has not yet been officially adopted by the Ministry of Health (MOH).

Stratification occurred at the district level based on the incidence in 2021 plus or minus the change in incidence from 2018 to 2021. This approach yielded four risk categories:

- High-risk districts (*districts à niveau de risque/surveillance* [DNRS] 4): Incidence of over 100 per 1,000 population in 2021 (42 districts with a population of 7,173,284);
- Moderate-risk districts (DNRS3): Incidence in 2021 of 1–100 per 1,000 population and an increase in incidence in any year between 2019 and 2021 compared with 2018 (53 districts with a population of 14,298,224);
- Low-risk districts (DNRS2): Incidence in 2021 of 1–100 per 1,000 population without any increase or no change in incidence in any of the three years from 2019 to 2021 compared with 2018 (10 districts with a population of 2,584,257); and
- Very low-risk districts (DNRS1): Incidence of less than 1 per 1,000 population in 2021 (nine districts with a population of 4,080,917).

Figure 1. Draft National Epidemiologic Stratification

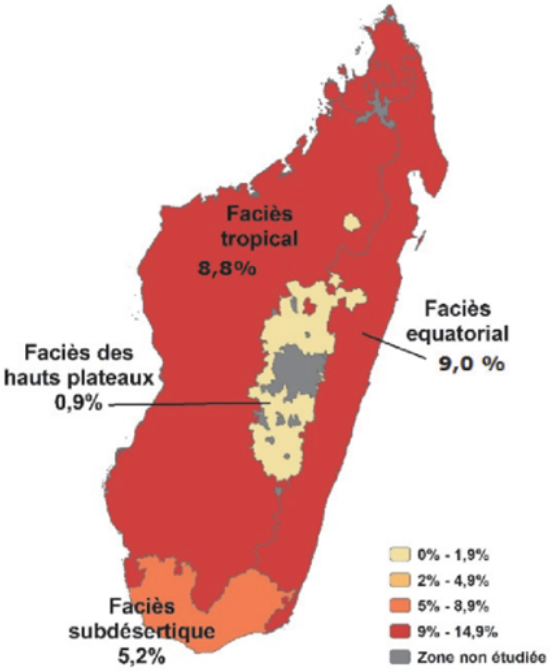


Note: Risk level 1 (DNRS1) represents the lowest malaria risk, and level 4 (DNRS4) is the highest risk level.

At the operational level, the plan calls for the consideration of additional factors, such as vector receptiveness and weather, and for each district to stratify their communes and fokontany (villages) every year to target interventions based on local epidemiology. Decisions will be informed by modeling exercises underway at the time of this writing with support from the Global Fund.

Figure 2. Prevalence Maps

Malaria parasite prevalence by microscopy among children aged 6–59 months, MIS 2016



Malaria prevalence by RDT among children aged 6–59 months, DHS 2021

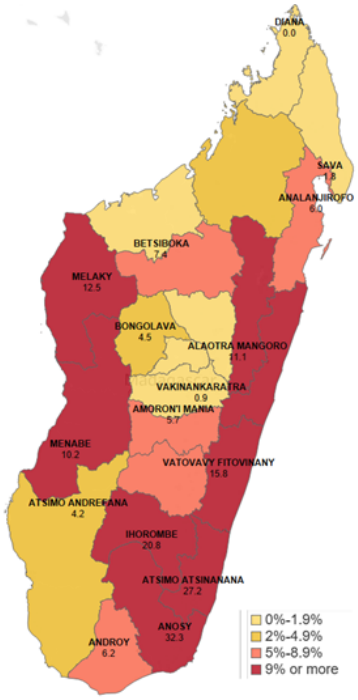
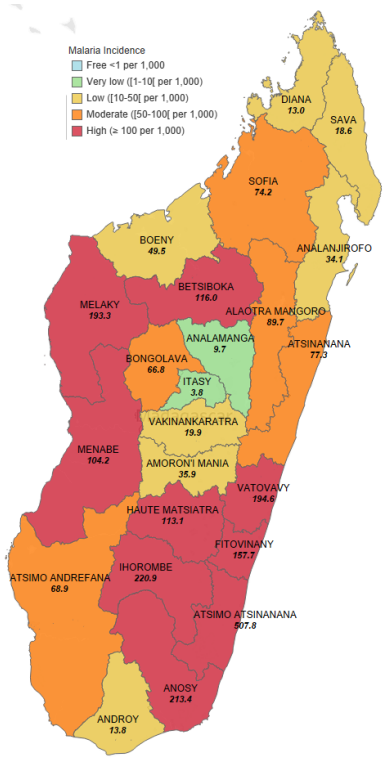
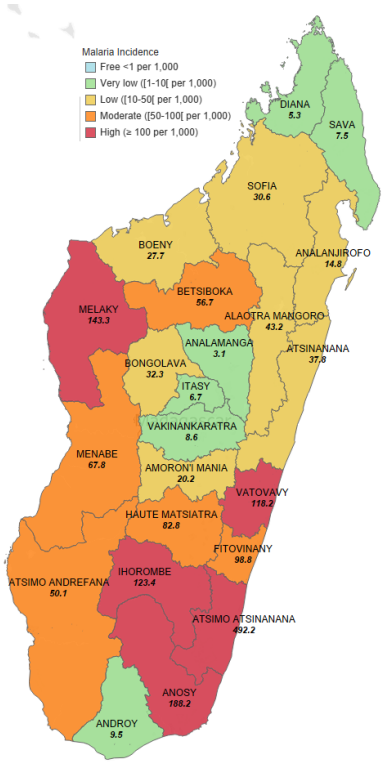


Figure 3. Incidence Maps

Malaria incidence map 2021, DHIS2



Malaria incidence map 2022, DHIS2



DHIS2: District Health Information Software-2.

Table 2. Malaria Parasites and Vectors

Principal malaria parasites	*Plasmodium falciparum*, *P. vivax*
Principal malaria vectors[1]	*An. gambiae s.s.*, *An. arabiensis*, and *An. funestus*

[1]See entomological monitoring section of the MOP for more details on vector bionomics and insecticide resistance and Indoor residual spraying section for details on residual efficacy.

As of 2022, while *An. gambiae s.l.* was the primary vector, the *Anopheles* diversity was high across the country with *An. funestus s.l.* and *An. mascarensis* also known as vector species. One species, *An. coustani*, has been incriminated as a potential emerging vector in the country and is commonly found across all ecosystems and with infective sporozoites, suggesting a role of *An. coustani* in malaria transmission. *An. funestus s.l.* is found in humid/tropical and equatorial settings as well as in subdesert zones; *An. coustani* was collected in humid/tropical settings, in a subdesert zone (Bezaha) and in the fringe of the Central Highlands with a tropical high-altitude climate; and *An. mascarensis* was predominantly found in the Central Highlands through the humid/tropical east and southern subdesert and dry forests, although detections from around the island have been reported. *An. gambiae s.l.* is the primary vector collected at all sites using all collection methods for both indoor and outdoor collections. Vector densities and biting rates are highest indoors and outdoors in March and April at all the sites. Indoor resting density of *An. gambaie s.l.* was very low (0–1.4 vectors per room per day), and outdoor

resting has also been observed. In calendar year (CY) 2022, outdoor resting collections were conducted in eight districts surveyed in the Atsimo-Andrefana and Ihorombe regions, and all sites had vectors resting outdoors in natural or pit shelters (98.8 percent of vectors were *An. gambiae s.l.* and the remaining were *An. funestus s.l.* and *An. coustani*). *An. gambiae s.l.* biting rates were highest during the first part of the night, as early as 8:00 p.m. until 11:00 p.m., indoors and outdoors, regardless of site or intervention used.

Status of Insecticide Resistance in Madagascar

Insecticide resistance monitoring in Madagascar is focused on insecticides used in insecticide-treated nets (ITNs) and IRS as these are the primary vector control interventions. In CY 2022 (from September 2021 to July 2022), *An. gambiae s.l.* was susceptible to pirimiphos-methyl, clothianidin, and chlorfenapyr at all 13 sites where the tests were conducted. Some degree of susceptibility to pyrethroids (deltamethrin and/or permethrin) remained in 10 districts; however, *An. gambiae s.l.* showed low-to-moderate-intensity resistance to deltamethrin and/or permethrin in five districts. Piperonyl butoxide fully restored susceptibility to both pyrethroids tested in the areas of resistance.

COUNTRY HEALTH SYSTEM

The Madagascar government 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 Health (MOH) developed a new national health sector development plan (*Plan du développement du secteur santé*, or PDSS) with four objectives for 2020–2024: (1) to strengthen promotional, preventative, and curative interventions and preparedness to respond to health emergencies; (2) to improve equity, availability, and utilization of quality health services; (3) to ensure the availability of resources and efficient management for effective and resilient health systems; and (4) to enhance the program management system for accountability at all levels of the health system.

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

The first tier comprises approximately 35,000 community health workers (CHWs). Two CHWs are assigned to every fokontany to provide integrated community case management (iCCM), including malaria testing with mRDTs and treatment for uncomplicated cases among children under five years of age who live more than 5 kilometers (km) from a basic health center (*centre de santé de base*, or CSB); prereferral treatment for severe cases in selected communes; and social and behavior change (SBC) for prevention, care seeking, antenatal care (ANC) and intermittent preventive treatment for pregnant women (IPTp). About 8–10 CHWs (from 3–5 villages) receive supervision from high-performing CHWs (CHW-relais) on technical and administrative tasks performed at community sites. PMI supports 11 of Madagascar's 23 regions with training, supportive supervision, and commodities.

The second tier of the health system is made of 2,710 public basic health centers (CSB1 [38.2 percent] and CSB2 [61.2 percent]) and over 800 officially-recognized private health facilities (private CSB1 and CSB2)[1] 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 and more comprehensive than those offered by CHWs: clinical iCCM, testing with mRDTs and microscopy and management of uncomplicated and severe malaria cases among people of all ages, prereferral treatment if definitive treatment is not possible on-site for severe malaria cases, ANC and IPTp, and SBC.

The third tier comprises level-1 and level-2 district referral hospitals; and the fourth tier comprises regional referral hospitals and university hospitals. They provide treatment for severe malaria cases, malaria diagnosis by mRDT, and microscopy.

Specific to malaria, there are two national referral labs for malaria at the central level: NMP's 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. PMI continued to provide tools for molecular analysis specifically for entomology, including reagents and training. NMP, with support from partners, is preparing to progressively decentralize advanced malaria analyses (e.g., molecular analyses and PCR) per the anticipated new national strategic plan for 2023–2027.

Malaria case management 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 at CSBs, supported by their CHW-relais, train and supervise the CHWs, while the health district management team provides support (e.g., training and supervision) to health care providers at CSBs 1 and 2.

NMP works in close collaboration with the MOH's directorate of family health (*Direction de santé familiale*) on malaria in pregnancy (MIP). The directorate provides policy guidance for the implementation of ANC, while NMP focuses on the provision of malaria services for pregnant women, including IPTp and malaria case management. They coordinate along with other Roll Back Malaria partners in the MIP technical working group, which 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 approximately 13,000 people (compared with the World Health Organization (WHO) recommendation of at least one

[1] Over 2600 CSBs in Madagascar are classified level 1 or 2 according to the size of population they serve. People walk to their CSB for basic services, vaccinations and pre-natal screenings. If they cannot be helped there, they are sent to the next hospital, often hours or days away. The CSB1 are staffed by a trained paramedic or nurse. A CSB2, often located in bigger villages or regional centers and staffed by a medical do. tor, and have beds and rooms for patients.

doctor per 10,000 inhabitants), one nurse for 9,500 inhabitants and one midwife per 10,200 inhabitants (WHO recommends one general nurse per 3,000 inhabitants and one midwife per 5,000 inhabitants). Less than 45 percent of the health care workforce practice in rural areas, where over 80 percent of the population lives. Consequently, over 50 percent of CSB1s have just one agent (the health care provider) at post, and over 50 percent of CSB2s do not have an assigned medical doctor, as recommended. This has impacted universal access to core malaria interventions (PDSS 2020).

According to the 2021 DHS, 55 percent of children under the age of five 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 a CSB. Institutionalization of CHWs to provide iCCM, with the extension of malaria community case management to all age groups and sulfadoxine-pyrimethamine (SP) administration, are planned by the MOH and NMP to improve access to malaria care and IPTp uptake. This is critical as over 60 percent of the population lives more than 5 km from a health facility, and 35 percent live more than 10 km from one.

In Madagascar, the private sector plays a large role in key health areas, including commodities and care provision. Madagascar has over 3,500 private facilities, including hospitals, clinics, and CSBs, according to the USAID SHOPS Health Facility Census. Results from that census have informed the malaria total market assessment roadmap 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 the age of five 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 versus 8 percent).

The Madagascar government allocated only 5.9 percent of its budget to health in 2022, 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 provide most of the malaria funding. Other donors include WHO, United Nations Children's Fund (UNICEF), and international nongovernmental organizations. Based on MOH directives, malaria commodities should be provided free-of-charge across all service delivery points.

The last National Health Accounts (NHA) survey was conducted in Madagascar in 2010. 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) (https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS?locations=MG). A new NHA being implemented by the MOH with support from WHO and other donors includes all health-relevant accounts, including malaria, and results are expected by September 2023. There are very few mechanisms to pool risk in the country, with low membership in ongoing community-based

mechanisms, such as mutuelles. MOH estimates that 14 percent of the population is covered through any type of financial protection such as insurance (PDSS 2020).

Madagascar has separate public and private sector health supply chains (commercial and noncommercial). The public sector supply chain is managed in the same way as the country's health pyramid, as outlined below.

Central level: *Direction de la pharmacie, des laboratoires et de la médecine traditionnelle* (directorate of pharmacy, or DPLMT) is in charge of providing direction, guidance, and supervision at the peripheral level regarding stock inventory management, good storage practices, the logistics management information system, and capacity strengthening 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 level. Donors procure commodities primarily for vertical programs on malaria, tuberculosis, 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.

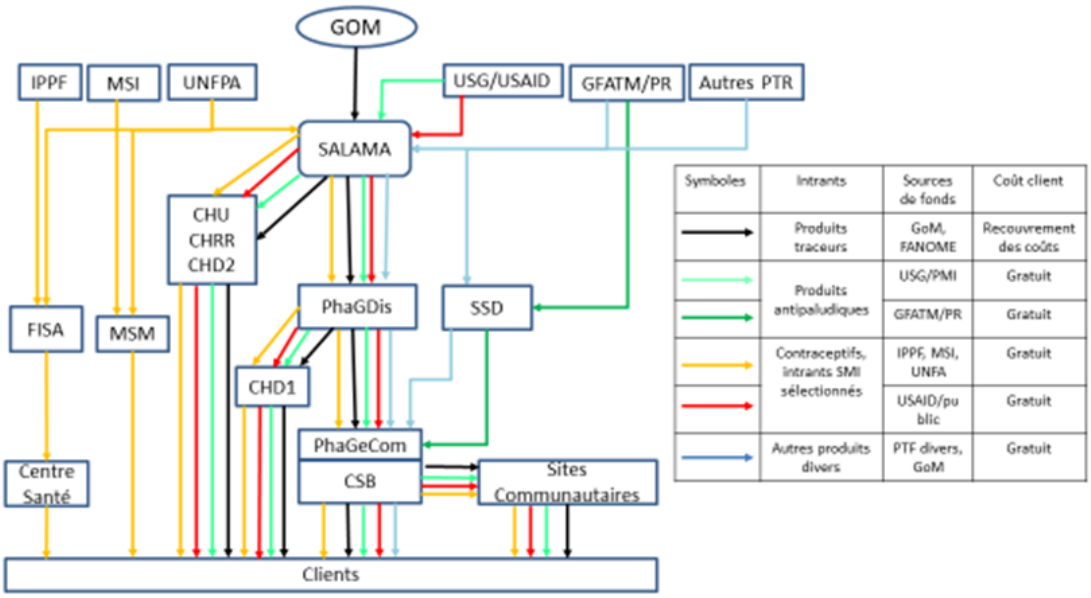
Intermediate level: This level is led by 23 *directions régionales de la santé publique* (regional public health directorates), which are present in every region of Madagascar and cover all 114 districts. Each district has a *pharmacie de gros de district* (district pharmaceutical depot, or PhaGDis); one district has two PhaGDis due to security issues and geographic accessibility. The PhaGDis are managed by a local nongovernmental organization contracted by the DPLMT to ensure that essential commodities are available, stored, and distributed to the commune level. The 115 PhaGDis manage malaria commodities, including storage, reporting of consumption and stocks on hand on a monthly basis, and ordering commodities on a quarterly basis to resupply the commune level. The PhaGDis submit their orders to NMP using harmonized *rapport-bon de commande* (purchase order) developed by DPLMT in collaboration with stakeholders. Once validated, purchase orders are issued to SALAMA to transport the approved quantities to the 115 PhaGDis 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: This level is managed by almost 2,700 CSBs and approximately 18,000 community sites (staffed by around 35,000 CHWs). The peripheral providers estimate their needs for pharmaceutical products to test and treat diseases, including malaria. The CSBs and CHWs submit orders every two months to the PhaGDis via *rapports-bons de commande* covering consumption, available stock, and quantification of estimated needs. Currently, the CSB selects products from the PhaGDis for their own needs and for the associated CHWs. In hard-to-reach communities, USAID/PMI is using drones to deliver 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 MOH. 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 MOH. They distribute their products through private retail pharmacies (*pharmacies d'officine*) and drug depots (*dépôts des médicaments*), operating in the 23 regions of Madagascar. Nonprofit faith-based organizations can procure products directly from SALAMA or from private wholesalers. USAID/PMI is supporting the MOH to pilot Accredited Drug Dispensing Outlets, which professionalizes the drug depots through training, best practices in storage, and accreditation to expand access to quality medicines to very remote populations.

Figure 4. Public Sector Supply Chain in Madagascar



CSB: C*entre de sante de base* (basic health facility); FISA: Fianakaviana Sambatra (subsidiary of IPPF); GOM: government of Madagascar; IPPF: International Planned Parenthood Federation; MSI: Marie Stopes International; MSM: Marie Stopes Madagascar; PTF: *partenaire technique financier* (financial technical partner); SSD: *service de santé de district* (district health service).

USAID/PMI, in partnership with UNICEF and the United Nations Population Fund, conducted the national supply chain survey, the findings of which are being used to develop the first-ever national supply chain strategic plan (to be completed by July/August 2023).

Health Information System

In Madagascar, the health information system comprises two systems: the routine health information system and the integrated disease surveillance and response (IDSR) system. The data that feed the health information system come from three different levels: hospital data (at the district level), CSB data at the facility/commune level, and CHWs (at the community level). Routine data are submitted monthly through paper-based forms and entered into the District Health Information Software-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 is still under evaluation before progressive extension throughout the country.

IDSR data are submitted on a weekly basis. Less than half of basic health centers 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, commodity stock status, and other key malaria indicators for all 114 districts are discussed and shared in the form of a bulletin. It is used to guide NMP decisions and interventions now that the reporting rate has improved to over 90 percent.

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 NMP.

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 of issues with data quality and reporting, particularly at the community level, where staffing and supervision are insufficient. 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 are in use. The digital health profile created in 2021 at the community level showed that Madagascar is still at a low level of maturity as a result of poor infrastructure (e.g., connectivity and electricity) and lack of foundational skills for CHWs to interpret data and adapt community health programming in response to data. However, the MOH has made efforts since 2021 to create an integrated information platform to contain routine, IDSR, and commodity data.

OTHER CONTEXTUAL INFORMATION

Madagascar is prone to recurrent political crises. The presidential election in 2023 increases the risk of major unrest and challenges advancing planned activities. Madagascar is also hit by an average of two or three cyclones annually during the rainy season, mainly from December to April. These cyclones sometimes kill and can leave thousands homeless, and the resulting floods and vector breeding grounds often trigger malaria upsurges compounded by road damage that reduces transportation of patients, commodities, and data. More than two-thirds of the population in southern Madagascar require food assistance due to chronic drought. Plague outbreaks occur approximately from August to April. Recently, polio outbreaks have occurred despite Madagascar's official certification as a polio-free country. These two diseases have become a priority for the MOH.

III. NMP STRATEGIC PLAN

PMI has technically and financially supported the development of the 2023–2027 malaria strategic plan, which had not been officially launched at the time of this update. PMI staff and partners played a critical leading role during the development of each technical section. The vision is "Madagascar without malaria," and the objectives are to:

- Reduce malaria mortality by 98 percent by 2027;
- Reduce malaria incidence by 50 percent by 2027;
- By 2027, eliminate malaria in 90 percent of districts where incidence was lower than 1 per 1,000 population in 2021.

NMP will focus on six pillars:

1. Protection of the at-risk population, including with ITNs and IRS; new strategies will be explored based on scientific evidence;
2. Early diagnosis and treatment, mainly for hard-to-reach populations, to reduce local transmission;
3. Improvement of malaria prevention and treatment during pregnancy;
4. Specific efforts to reach key populations, such as mobile workers, mining workers, and isolated populations;
5. Expanded SBC strategies; and
6. Improved surveillance and monitoring to guide programmatic decisions.

This new strategy aims to improve the implementing environment for fighting malaria and to promptly respond to resurgence. Elimination is considered to be a cross-cutting component of each pillar.

IV. KEY MALARIA DATA

EVOLUTION OF KEY SURVEY-BASED MALARIA INDICATORS

Table 3. Key Survey Indicators

Indicator	MIS 2013	MIS 2016	MICS 2018	DHS 2021
% of households with at least one ITN	69	80	78	69
% of households with at least one ITN for every two people	29	44	41	30
% of population with access to an ITN	48	62	62	n/a
% of population that slept under an ITN the previous night	55	68	56	n/a
% of children under the age of five who slept under an ITN the previous night	62	73	62	56
% of pregnant women who slept under an ITN the previous night	62	69	61	55
% of children under the age of five with a fever in the last two weeks for whom advice or treatment was sought	54	56	48	45
% of children under the age of five with a fever in the last two weeks who had a finger or heel stick	13	16	13	20
% of children receiving an ACT among children under the age of five with a fever in the last two weeks who received any antimalarial drug	54	17	29	55
% of women who attended four ANC visits during their last pregnancy	n/a	n/a	51	60
% of women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	10	15	31
Mortality rate among children under the age of five per 1,000 live births	n/a	n/a	59	75
% of children under the age of five with parasitemia by microscopy	9	7	n/a	n/a
% of children under the age of five with parasitemia by RDT	10	5	n/a	8

ACT: artemisinin-based combination therapy; ANC: antenatal care; DHS: Demographic and Health Survey; IPT: intermittent preventive treatment for pregnant women; ITN: insecticide-treated net; MICS: Multiple Indicator Cluster Survey; MIS: Malaria Indicator Survey; RDT: rapid diagnostic test.

Figure 5. ITN Use-to-Access Ratio Map

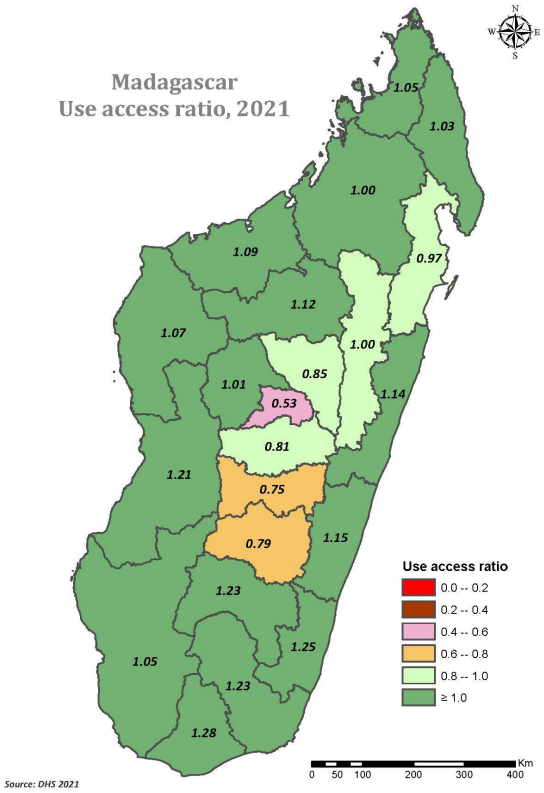


Table 4. Evolution of Key Malaria Indicators Reported Through Routine Surveillance Systems

Indicator	2018	2019	2020	2021	2022
# of all-cause patient consultations	5,323,788	7,229,157	6,643,045	10,223,382	10,772,745
# of suspect malaria cases[1]	2,606,443	3,183,805	3,970,573	4,771,328	4,454,817
# of patients receiving diagnostic test for malaria[2]	2,290,797	2,855,995	3,798,824	4,567,444	4,207,742
Total # of malaria cases[3]	N/A	N/A	N/A	N/A	N/A
# of confirmed cases[4]	965,390	991,740	1,950,471	2,343,709	1,670,773
# of presumed cases[5]	N/A	N/A	N/A	N/A	N/A
% of malaria cases confirmed[6]	N/A	N/A	N/A	N/A	N/A
Test positivity rate (TPR)[7]	42%	35%	51%	51%	40%
Total # of malaria cases in children under the age of five[8]	309,331	318,489	618,242	720,179	529,573
% of cases in children under the age of five[9]	32%	32%	32%	31%	32%
Total # of severe cases[10]	34,845	37,306	65,707	78,723	50,349
Total # of malaria deaths[11]	927	657	674	544	282
# of facilities reporting[12]	3,156	3,400	3,495	3,360	3,594
% of data completeness[13]	95%	94%	97%	97%	97%

Note: Community-level data are integrated into the broader health management information system (HMIS) with a low completeness rate, so these numbers only include facility-level data.[1] Number of patients presenting with signs or symptoms possibly due to malaria (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] Number of confirmed cases divided by total number of cases. [7] Confirmed cases divided by the number of patients receiving a diagnostic test for malaria (RDT or microscopy). [8] Outpatient and inpatient, confirmed and unconfirmed. [9] Total number of cases in children under the age of five divided by the total number of cases. [10] *Severe* cases means hospitalized for malaria at hospital and facility levels. [11] All ages, outpatient, inpatient, confirmed, and unconfirmed. [12] Total number of the health facilities reporting data into the HMIS/DHIS2 system that year. [13] Number of monthly reports from health facilities divided by the number of the health facility reports expected (average for the calendar year).

Table 5. Disaggregated Community-Level Data

Indicator	2020	2021	2022
# of patients receiving diagnostic test for malaria from a CHW	66,273	530,242	532,224
Total # of malaria cases reported by CHWs[1]	37,851	287,336	277,675
% of CHW reported cases (among total malaria cases)[2]	1.9%	10.9%	14.3%

[1] Includes all ages, confirmed and unconfirmed. [2] Total number of malaria cases reported by CHWs divided by the total number of malaria cases in the previous table plus the total number of confirmed malaria cases reported by CHWs. CHW: community health worker.

Table 6. Elimination Context: Policy and Scope

Malaria Policy and Implementation	Response		
1. Is malaria elimination part of the current malaria strategy?	Yes		
2. Are individual malaria cases investigated? If yes, please note whether this occurs nationally or subnationally.	Yes, subnationally		
3. Are foci investigated? If yes, please note whether this occurs nationally or subnationally.	Yes, subnationally		
Elimination scope	**2020**	**2021**	**2022**
4. Total number of districts in the country (admin 2)	114	114	114
5. Number of districts that have been verified as having eliminated malaria?[1]	0	0	0
6. Among districts not verified as having eliminated malaria, how many districts are targeted for elimination efforts?[2]	13	13	13
6A. Among districts targeted for elimination efforts, how many have active elimination activities?[3]	3	3	3

[1] *Malaria elimination* is the interruption of local transmission, that is, no local malaria cases for three years. This refers to NMP-led subnational verification only. It is not referring to *elimination certification*, which can only be granted by WHO to an entire country. [2] In NMP's 2019 elimination plan, 13 districts were identified as pre-elimination (incidence of 1–10 per 1,000 and test positivity rate of less than 5 percent) or elimination (incidence of less than 1 per 1,000 population) districts. However, elimination-specific activities are functional in only three PMI-supported districts. [3] Elimination activities include but are not limited to reactive insecticide-treated nets (ITNs) and/or IRS, reactive case detection, reactive or focal drug administration, procurement and/or strategies for single-dose primaquine for *P. falciparum* or radical cure primaquine for *P. vivax*, SBC for hard-to-reach or migrant populations, case investigation, and foci classification.

V. Other Implementation Information

Table 8. 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[2]	Ankazomborona	AL	100%
2020[2]	Ankazomborona	ASAQ	100%
2020[2]	Antsenavolo	AL	97.7%
2020[2]	Antsenavolo	ASAQ	98.9%
2020[2]	Matanga	AL	100%
2020[2]	Matanga	ASAQ	100%
2020[2]	Vohitromby	AL	91%
2020[2]	Vohitromby	ASAQ	97.8%

[1] Dentinger, C.M., T.A. Rakotomanga, A. Rakotondrandriana, 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.
[2]Country report, 2020. AL: artemether-lumefantrine; ASAQ: artesunate-amodiaquine; DP: dihydroartemisinin-piperaquine; PCR: polymerase chain reaction; TBD: to be determined.

Both artemether-lumefantrine (AL) and artesunate-amodiaquine (ASAQ) have therapeutic efficacies above the 90 percent WHO recommended threshold and are well-tolerated in Madagascar.

VI. Key Policies

Table 9. Policies in Madagascar

National Strategic Plan (2023–2027), under validation	
National Surveillance, Monitoring, and Evaluation Plan (2023–2027), under validation	
National Digital Health Strategy (2023–2027)	
National Community Health Plan (2019–2030)	
National Social Behavior Change/Communication Strategy (2018–2022)	
National Supply Chain Strategy/Master Plan	
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 P. falciparum malaria?	ASAQ
What is/are the second-line treatment(s) for uncomplicated P. falciparum malaria?	AL
What is/are the first-line treatment(s) for uncomplicated P. vivax malaria?	ACT + 14 days of primaquine + G6PD deficiency testing (not being implemented due to lack of G6PD deficiency testing and lack of primaquine)
What is the first-line treatment for severe malaria?	Injectable artesunate
In pregnancy, what is the current first-line treatment for uncomplicated P. falciparum malaria in the first trimester?	ACT
Given the WHO policy change to recommend AL as treatment for uncomplicated malaria in the first trimester, does the MOH plan to update the policy on treatment of MIP in the first trimester? And if so, what is the status of this policy change and implementation of the new policy?	No change in policy yet
In pregnancy, what is/are the first-line treatment(s) for uncomplicated P. falciparum malaria in the second and third trimesters?	ACT
What is/are the first-line treatment(s) for *P. vivax* malaria during pregnancy?	Not mentioned in the treatment guidance
In pregnancy, what is the first-line treatment for severe malaria?	Injectable artesunate
Is prereferral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)?	Yes; rectal artesunate is used for prereferral treatment.

Is prereferral treatment of severe disease with rectal artesunate recommended for community health workers?	Yes.
Community Health Policy (updated Oct 2022)	
What is the # of CHWs currently providing iCCM?	14,089 CHWs providing iCCM in 11 PMI-supported regions
What is the country's target for the number of CHWs providing iCCM?	42,869
What percent of the country's target is met?	N/A
Does the country have a policy that enables the routine, regular payment of salaries/stipends for CHWs?	No
Do CHWs have the authority to test and treat all ages for malaria?	Training and logistics are underway to expand community-level malaria management to persons of all ages in 58 districts.
Prevention of Malaria in Pregnancy Policy (202l)	
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 13 weeks of gestation
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 ANC/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 month's 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, in three districts. CHW are allowed to give IPTp beginning with the second dose. Community IPTp is being planned for 58 districts, however.

ACT: artemisinin-based combination therapy; AL: artemether-lumefantrine; ANC: antenatal care; ASAQ: artesunate-amodiaquine; CHW: community health worker; G6PD: glucose-6-phosphate dehydrogenase; HMIS: health management information system; IPTp: intermittent preventive treatment for pregnant women; MIP: malaria in pregnancy; MOH: Ministry of Health; SP: sulfadoxine-pyrimethamine.

VII. PARTNER LANDSCAPE

Table 10. Partner Landscape

Partner	Key Technical Interventions	Geographic Coverage	Funding Amount or In-kind Contribution	Time Frame
PMI	• Support to vector control activities (ITN mass campaign, ITN community-based continuous distribution, IRS, larval source management) • Procurement of national needs for malaria commodities • Training and supportive supervision • SBC • Monitoring and evaluation • Operations research • Elimination	National	$26,000,000	Yearly
Global Fund to Fight AIDS, Tuberculosis and Malaria	• Support for nationwide bednet mass campaign • Procurement of national needs for malaria commodities • Training and supportive supervision • Mass drug administration • Outbreak response	National	$12,227,553	NFM3 Current grant covers 2021 to 2023
			$72,297,135	GC7 grant covers 2024–2027
Government of Madagascar	• Procurement of national needs for malaria commodities • Outbreak response • SBC	National	N/A	Yearly
United Nations	• Mass drug administration • Emergency ITN • Technical assistance	Subnational	N/A	N/A

ITN: insecticide-treated net; SBC: social and behavior change.