ANGOLA 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 27 countries in Sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Angola began implementation as a PMI partner country in FY 2006. Please see the Angola Malaria Operational Plan for more information on PMI's approach and investments.

II. CONTEXT

Angola has an estimated population of about 34,094,077 (Angola National Institute of Statistics, 2023). Malaria is transmitted throughout Angola, with 100 percent of the population at risk. Malaria continues to be the primary health burden in Angola and the principal cause of morbidity and mortality. Data reported in 2022 by the Department of Epidemiological Surveillance and Hygiene of the Ministry of Health (MOH) show that malaria was the leading cause of low birth weight and anemia and was the primary cause of death reported nationwide (44 percent). There is significant geographical heterogeneity in malaria transmission in Angola, with hyperendemicity historically observed in the northeast provinces of Cabinda, Cuanza Norte, Lunda Norte, Lunda Sul, Malanje, and Uige. In the north, the peak malaria transmission season extends from March to May, with a secondary peak in October to November. The central and coastal provinces (Benguela, Bie, Cuanza Sul, Huambo, Luanda, Moxico, and Zaire) are mesoendemic with stable transmission. The four southern provinces bordering Namibia have highly seasonal transmission and are prone to epidemics. These ecological zones and their areas of transition are distinguished by rainfall and other climatic conditions. The rainfall duration ranges from about three months in Cunene Province to eight or nine months (October to April or May) in northern and eastern Angola.

The malaria prevalence rate among children less than five years of age remained stable (around 14 percent) from 2011 (Angola 2011 Malaria Indicator Survey [MIS]) to 2015–2016 (Angola 2015–16 Demographic Health Survey [DHS]). A planned nationwide prevalence survey was postponed to 2023–2024 because of COVID-19 restrictions and other constraints. However, according to the World Malaria Report 2022, Angola with 3.4 percent of malaria cases and 2.4 percent of malaria deaths in the world is one of the countries that account for about 52 percent of all the global malaria burden in terms of malaria cases and deaths,

respectively. In 2022, Angola reported 12,474 deaths (a decrease of 9 percent in comparison with 2021). The six PMI-focus provinces (Cuanza Norte, Lunda Norte, Lunda Sul, Malanje, Uige, and Zaire) had a decrease in malaria deaths of 15 percent over the same time frame (2,546 deaths in 2022 versus 2,987 in 2021) (Angola Health Management Information System, [HMIS]).

In 2022 the number of reported malaria cases remained at a similar level to 2021, when a slight increase of .6 percent was observed. A total of 9.2 million malaria cases were recorded (85.2 percent confirmed by microscopy or rapid diagnostic test [RDT]), of which 32.5 percent were in children under five years of age and 3 percent in pregnant women. In 2022, 30 percent of all patients seeking health care were diagnosed with malaria (4.5 percent with severe malaria) and out of approximately 16.2 million fever cases tested at service delivery sites, 53.2 percent were positive for malaria. The gradual increase over the years can be partially explained by the 84 percent increase since 2006 in patients seeking care. More patients are seeking care through outpatient clinics and malaria case management at community level through community health and development agents (*agentes de desenvolvimento comunitário e sanitário,* or ADECOS). There's also been increases in care-seeking, availability of services, and in Angola's population.

Furthermore, with the shift from paper-based reports to digital platforms like the District Health Information Software Version 2 (DHIS2) supported by PMI, malaria monthly report completeness rates have increased nationwide from 82 percent in 2017 to 92.1 percent in 2022, while the timely reports rate improved from 55 percent in 2017 to 80.5 percent in 2022.

Nonetheless, in 2022 in PMI-focus provinces a decrease in malaria cases of 11 percent was observed in 2022 in comparison with 2021 as well as a decrease of about 15 percent of malaria deaths.

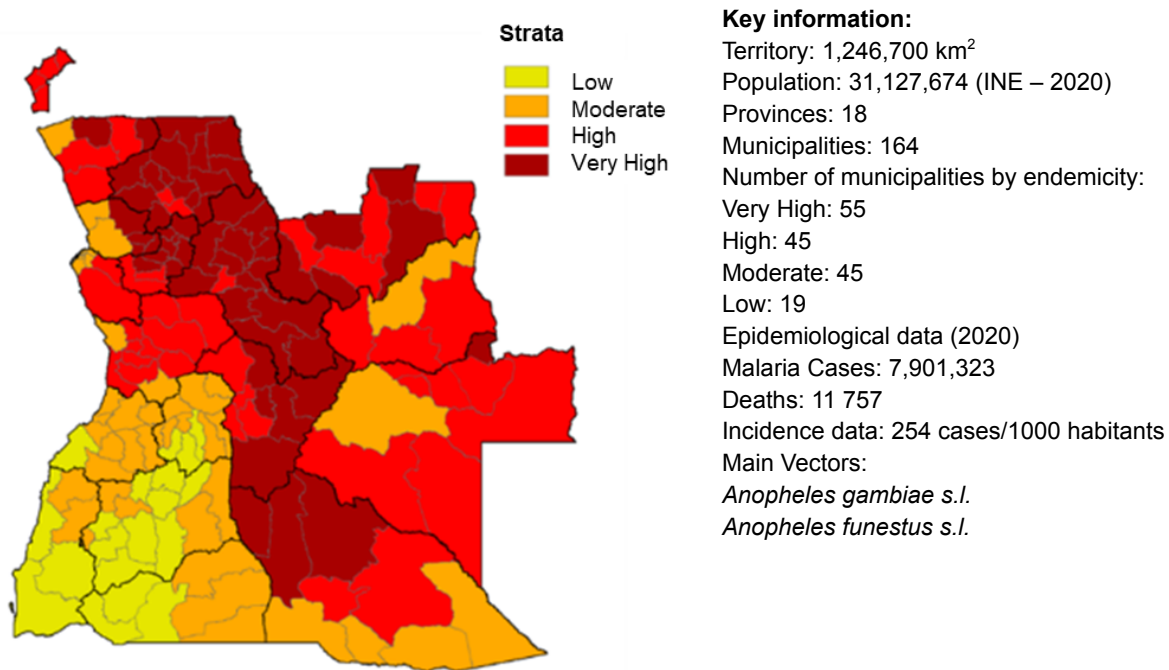## Table 1A: General Demographics and Malaria Situation

Population in 2023	34,094,077 (Angola National Institute of Statistics projections 2014–2050, 2016)
Population at risk of malaria	100% (World Health Organization World Malaria Report 2022)
Malaria prevalence	13.5% (DHS, 2015-2016)
Malaria incidence/1,000 population at risk	279 (National Malaria Control Program, 2022)
Peak malaria transmission	March to May

DHS: Demographic and Health Survey.

STRATIFICATION

The National Malaria Strategic Plan (NMSP) 2021–2025 includes an updated Malaria Risk Map Stratification at the district level developed using routinely collected incidence and prevalence data from the 2015–2016 DHS and a mini-MIS 2018 in the south (see Figures 1 and 2). This information was used to tailor a package of interventions for each risk stratum addressing each specific objective in the NMSP 2021–2025. Of note, all PMI-focus municipalities fall into "very high" or "high" strata except for Soyo Municipality in Zaire Province and Saurimo Municipality in Lunda Sul Province, which are "moderate." The packages proposed for "very high" and "high" transmission strata in the NMSP are the same.

Figure 1: Malaria Risk Stratification Map, by Municipality, 2020

Strata

- Low
- Moderate
- High
- Very High

Key information:
Territory: 1,246,700 km^2
Population: 31,127,674 (INE – 2020)
Provinces: 18
Municipalities: 164
Number of municipalities by endemicity:
Very High: 55
High: 45
Moderate: 45
Low: 19
Epidemiological data (2020)
Malaria Cases: 7,901,323
Deaths: 11 757
Incidence data: 254 cases/1000 habitants
Main Vectors:
Anopheles gambiae s.l.
*Anopheles funestus s.l.*

Source: Angola National Institute of Statistics (INE) 2022

Table 1B: Malaria Risk Stratification and Population Living in Each Category, 2020

Strata	Incidence	Prevalence	# Municipalities	Population in 2020	Population (%)
Low	<300	< 10%	19	4,836,736	15.5%
Moderate	300 - 500	10 - 30%	45	14,995,436	48.2%
High	500 1000	30 50%	45	7,346,536	23.6%
Very High	> 1000	> 50%	55	3,948,967	12.7%

Source: NMSP 2021–2025

Figure 2: Confirmed Cases per 1,000 population by District (2022)
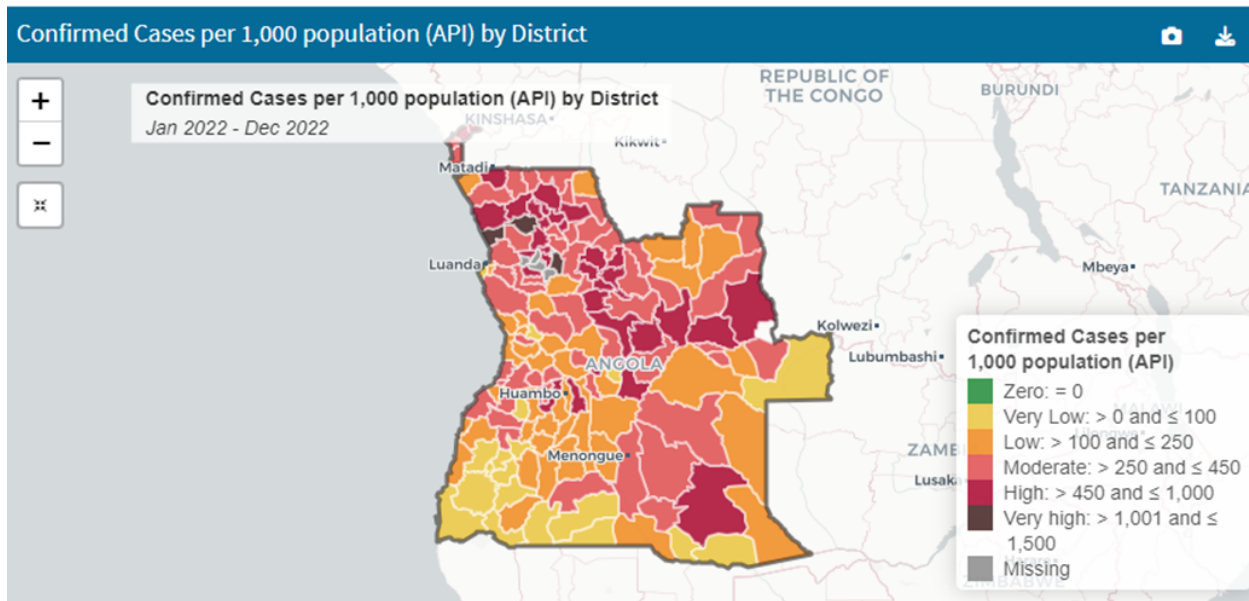
Source: Angola Malaria Information System, June 2023

Table 2: Malaria Parasites and Vectors

Principal Malaria Parasites	*Plasmodium falciparum* (87 percent), *P. vivax* (estimated 7 percent), *P. malariae* (estimated 3 percent), and *P. ovale* parasites (estimated 3 percent) (NMSP 2021–2025)
Principal Malaria Vectors*	*Anopheles gambiae* (*An, gambiae* s.l., and *An. arabiensis*) and *An. funestus* s.l. Additionally, frequently captured in houses, *An. rufipes, An. squamosus* and *An. coustani*.

* 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

Administrative Structure and Governance

Administratively, according to Law nº18/16 (October 17, 2016), the country is divided into 18 provinces, 164 municipalities, 518 communes, and 44 urban districts. The capital of the Government of the Republic of Angola (GRA) is Luanda.

The country has been implementing a decentralization process that establishes a certain autonomous power, in which the municipality has become a unit of administration and administrative management. This fact has a great impact on the development of social and political capacities to improve health conditions.

Health Care Delivery System and Funding

Health care in Angola is universal and free. The country's health system is coordinated by the MOH. It has been divided into four types of services: (i) public system also called the National Health Service of Angola, (ii) for profit, (iii) non-profit, and (iv) traditional. The public sector also covers the health services provided by the Angolan Armed Force and the Ministry of the Interior, and public-owned companies such as *Endiama and Sonangol*, among others. ADECOS is overseen by the Ministry of Territorial Administration (and not the MOH). The private sector, under the supervision of the General Health Inspection Department, is concentrated in urban and peri-urban areas where the public health service network is limited or non-existent. The traditional sector is unregulated. However, the MOH plays a prominent role in defining and implementing the health sector policy and in promoting and executing the GRA's health programs, which aim to achieve universal health coverage by 2025.

The National Health Service comprises a hierarchical system in four levels of service provision and aggregates at different levels of health management:

- **Central level:** Includes the Directorate of the MOH, supporting bodies and central executive bodies, in articulation with other multi-sectoral bodies.
- **Provincial level:** Includes the provincial health offices bodies, which are administratively and organically dependent on the provincial governments, and technically dependent on the central level of the MOH, in articulation with other multi-sectoral bodies.
- **Municipal level:** Includes the municipal health directorates, which administratively and organically depend on the municipal administration, and methodologically on the provincial health offices, as well as on the MOH central level bodies, in articulation with other multi-sectoral bodies. At the municipal level, the municipal health directorates constitute the highest health authority.
- **Community level**: The promulgation by the GRA of the ADECOS policy provides the framework to improve family health promotion, including knowledge about how to prevent the main causes of illness and death in the community. Since 2016, ADECOS are authorized and trained to conduct RDTs and treat positive cases of uncomplicated malaria at community level. This policy is still in the implementation and expansion phase nationwide. Along with managing malaria at community level, their terms of reference include increasing community awareness of health prevention interventions, such as basic malaria prevention activities (e.g., use of insecticide-treated mosquito nets [ITNs], early treatment-seeking, and compliance with diagnostic outcomes), as well as vaccination, improved sanitation, and access to safe water and other non-health functions.

In the public sector, there are 3,164 health facilities (HFs) structured with three levels of care, namely: primary level with 3,099 HFs; secondary level with 50 HFs and tertiary level with 14

HFs. In terms of type, these HFs are divided into: 15 national hospitals, 32 central and specialty hospitals, and 18 provincial hospitals.

The 2022 National Development Plan reports that 80 percent of the population has access to health services, representing a 36 percent increase since 2014. The National Quantification Report also projects increasing access to the public sector for health care from 2023–2025, both with increased access to HFs, as well as community case management via ADECOS.

There are considerable challenges in both the number of existing antenatal care (ANC) specialized facilities and the quality of family planning and reproductive health services provision is considered suboptimal. Similarly, only 12 percent of health facilities in PMI-focus provinces provide laboratory services.

With 5,610 physicians and 40,006 nurses for a population of over 34,094,077 in 2023, Angola has 1.69 medical doctors and 12.09 nurses per 10,000 inhabitants (MOH, 2022).

In addition to the insufficient number of health professionals at all levels, the national health system is characterized by an unequal distribution of available human resources for health (HRH) across all services and levels. There's a large gap between HRH requirements and HRH available at each tier of the health system. There is a dearth of health professionals trained in health sciences, such as public health, epidemiology, statistics, disease program management, pharmacy, logistics and health information technology. In public sector HFs, morale is generally poor due to the low remuneration and limited career development prospects. Poor training and lack of motivation also affect the quality of patient care in the public sector.

These factors also affect staff compliance with MOH regulations, guidelines, protocols, and data reporting requirements; and performance management systems are not enforced in a systematic manner. Table 3 below summarizes the availability of health workers and health services in the six PMI-focus provinces.

Table 3: General Demographics and Malaria Situation in the Six PMI Focus Provinces

Province	Population in 2023	# of Municip alities	# of Health Workers	# of HFs*	# of ANC Clinics	% of HFs with ANC	# of ADECOS	# of labs	% of HFs with labs
Cuanza Norte	570,385	10	1,388	119	23	19	0	19	16
Lunda Norte	1,121,715	10	1,566	103	45	44	0	16	16
Lunda Sul	711,130	4	1,220	102	22	21	57	12	12
Malanje	1,284,855	14	2,572	164	39	24	121	13	8
Uige	1,922,673	16	1,838	349	78	22	106	25	7
Zaire	789,570	6	1,232	99	59	60	81	24	24
Overall	**6,400,328**	**60**	**9,816***	**936**	**266**	**28**	**365**	**109**	**12**

Source: Angola National Institute of Statistics, 2022
* Of 9,816 health workers: 10.7 percent are doctors, 76.0 percent nurses and 13.3 percent laboratory technicians.
ADECOS: acronym for *agentes de desenvolvimento comunitário e sanitário* or community health and development agents;
ANC: antenatal care; HF: health facitlities.

Funding remains the single most important constraint facing the health sector in Angola. Although the government budget allocation to the health sector has increased over the years, i) this budget growth is not commensurate with population growth and has never met the commitment of 15 percent made by African Union Heads of State in Abuja; ii) it remains to be seen how much of the year's GRA expenditure will be on health. According to the *Sistema Integrado de Gestão Financeira do Estado* of the Ministry of Finance, a significant portion of health expenditure is covered by private, family or individual entities; and there is an evident risk that the planned level of GRA expenditure on health may not be realized. Weak and limited health financing is one of the leading causes of the poor coverage and quality of health services.

OTHER CONTEXTUAL INFORMATION

Gender inequalities, societal norms, and power relationships of men over women still are deeply rooted in Angolan society with a Gini Index of 51.3, very high by international standards, and need to be addressed, according to the World Economic Forum Gender Gap Index Report (WEF, 2022). The gender gap index score in Angola slightly decreased to .64 in 2022, meaning that females were 36 percent less likely to have the same opportunities as males in the country. Stronger gender disparities were measured, mostly in the category of

Political Empowerment. Angola ranked among the lowest performances in Sub-Saharan Africa.[1] The country positioned 28th among 36 nations in the region.

In Angola, the rate of women's literacy is significantly lower than that of men (less than 67 percent of the literacy gender gap has been bridged to date). A report by Christian Aid sums up the situation in the country with regard to the social determinants of health, pointing out that violence is still rife in homes and communities, and that domestic violence was only outlawed in 2011 and remains endemic. Deep-rooted, harmful gender norms and sexual violence in homes and schools is widespread.[2] In such a context, income and other social determinants of health, including stigma and discrimination, are more likely to act as a barrier to the access of key and vulnerable populations to health services. Direct responses to improve gender inequality include providing economic strengthening activities for girls and women to improve financial literacy and self-reliance.

In terms of the epidemiological landscape, despite improvements in the main global health indicators, maternal mortality and teenage pregnancy remain high; there is a high incidence of infectious and parasitic diseases, in particular malaria, HIV/AIDS and tuberculosis; and there are persistent outbreaks of cholera and measles. These have affected health care services, especially outbreaks of yellow fever[3] in 2016 and cholera[4] in 2017–2018.

National treatment guidelines are for both the public and private sectors; however, the private sector often does not follow the established norms and there is not much reinforcement in terms of regulatory authorities to address this issue. Currently, there is no technical working group on private sector case management for malaria. Antimalarials of all kinds—including monotherapies and drugs for severe malaria—are available in private outlets. According to a fever management Reach and Recall study conducted by PMI in 2016 in Uige and Huambo, with 1,068 respondents, 14 percent of respondents went to private sector pharmacies, 4.5 percent visited a private health facility, and 24 percent self-medicated after detecting a fever.

The wide-spread adoption of DHIS2 is a key milestone responsible for improving malaria surveillance reporting. Another area where notable improvement is reported is in the supply chain, particularly improved management at the national warehouse. Through improved relationships between the MOH and development donor partners (World Bank, Global Fund to Fight AIDS, Tuberculosis, and Malaria [Global Fund], PMI, and others), targeted technical assistance strengthened the supply chain at a time when procurements worldwide were thrust into crisis. Through strengthening key health systems issues such as improving data collection and utilization along with addressing gaps in supply chain, the MOH can now be better able to address stockouts and plan for future health needs, particularly outside of donors' focus geographic scope.

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[1] https://www.statista.com/statistics/1220485/gender-gap-index-in-sub-saharan-africa-by-country/
[2] Reducing Gender-based Violence in Angola
[3] https://www.who.int/emergencies/disease-outbreak-news/item/14-june-2016-yellow-fever-angola-en
[4] WHO Weekly Bulletin on Outbreaks and Other Emergencies

Other Studies

A Malaria Behavior Survey (MBS) funded by PMI aiming to measure perceptions and attitudes towards malaria (ITN use, fever episode and malaria in pregnancy) was conducted in March 2023 in three (Cuanza Norte, Lunda Sul and Zaire) of the six PMI-focus provinces. Final report and findings will inform the elaboration of the Malaria National Behavior Change and Communication Strategy. The MBS key preliminary results dissemination workshop was conducted in June 2023, during which the following findings stood out:

- Knowledge, attitudes and beliefs about ITNs is high, as 89 percent of the sample listed mosquito nets as a malaria prevention measure. Consistent net use—using an ITN every night—was around 68 percent in the sample. Economically stable families with better living conditions are less likely to use a mosquito net. The same pattern applies to age bands from 15-34 and over 45 who are less likely to sleep under a mosquito net in comparison to age groups between 35-44, male or female. Listed reasons for negative attitudes towards ITNs include heat (50 percent) and net smell due to insecticide (42 percent). Another 58 percent mentioned the inconvenience for couples during sex.

- Results show that compared to other countries where similar surveys have been conducted, perceptions towards health workers for case management and scoring indicators are positive. With regards to related factors, 77 and 69 percent of respondents have favorable perceptions about health facilities and attitudes towards seeking care, respectively; 42 percent have comprehensive knowledge of seeking care and treatment for malaria and 67 percent have a perception of descriptive community norms regarding testing and treatment, while 44 percent have a perception of the response to the effectiveness of the antimalarials. One perceived challenge is the delayed uptake of the prescribed antimalarial; of the group of children under five who reported having had fever, 88 percent sought care first from a reliable source of care for fever (which ranged from the health unit to ADECOS) and 76 percent received immediate care (which included test and antimalarial in the case of a diagnosis). Only 45.6 percent of the 67.7 percent with a positive diagnosis promptly took the antimalarial when 60 percent of them confirmed having received the antimalarial at the time of the confirmed diagnosis.

- In general, women trust intermittent preventive treatment for pregnant women (IPTp) and ANC, but do not have good perceptions of health workers. Women do not know that they should go to the ANC early because they have the perception that health workers will send them home if they show up too early. Preliminary data also show that women with higher education are more likely to obtain a mosquito net at the ANC compared to women with lower education. Less than two-thirds of women with lower education get their mosquito nets from ANC. Issues associated with cost, including transportation and

expenses associated with the purchase of sulphadoxine-pyrimethamine (SP) from private pharmacies (25 percent), distance from the health unit (16 percent), health workers' negative attitude (17 percent) and lack of time (20 percent) were the reasons reported for the late demand for ANC services. In comparison to younger age groups, women from 35 to 45 years showed a lower trend, thus greater resistance, to seek ANC services.

From July 25 to August 4th 2022 a Matchbox Malaria Study was conducted in Southern Angola in Southern African Development Council Malaria Elimination 8 Initiative (SADC E8) supported provinces of Cunene and Cuando Cubango to assess the availability of health services in underserved communities and mobile and migrant populations. Results informed the elaboration of the regional strategy for SBC on vulnerable and displaced populations. Key findings from the study point to the need to improve cross-border collaboration, prioritizing data sharing (including outbreak warning systems); develop an investment model case to demonstrate the importance of reaching mobile and migrant populations to accelerate elimination efforts, including cost-benefit analysis of strategic approaches. Facilitating joint procurement and establishing a regional warehouse for commodities storage would signal increased advocacy efforts for the right representation of mobile and migrant populations in the national malaria programs.

A Knowledge, Aptitude and Practice study was conducted in May of 2022 in the two Global Fund-focus provinces (Benguela and Cuanza Sul) to measure the effectiveness and key messages catchment as well as behavior change at population level. The report has been finalized and dissemination is scheduled for the third quarter of 2023.

III. NMCP STRATEGIC PLAN

The general objectives of the NMCP, as articulated in the NMSP 2021–2025, developed with technical and financial support of PMI, are to reduce malaria-related morbidity and mortality by 40 and 50 percent respectively by 2025, from 2020 baseline figures. To achieve this, the NMSP includes the six strategic objectives summarized in the organogram below:

Figure 3. Strategic Framework Angola NMSP, 2021–2025
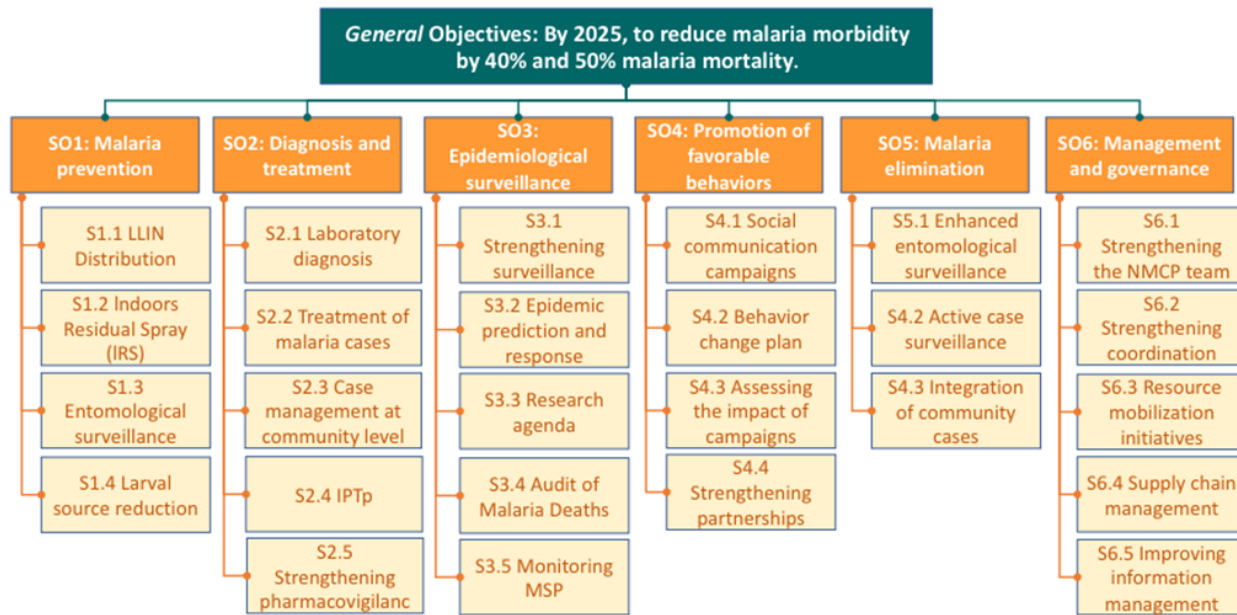
MSP: Malaria Strategic Plan (S3.5)

<u>Strategic Objective 1: Malaria prevention</u> — Protect 80 percent of the population at risk with malaria preventive interventions by 2025.

The NMCP's strategy for malaria prevention has four main components: ITNs, prevention of malaria in pregnancy, spraying (indoor and outdoor), and larvicide application. The NMSP 2021-2025 calls for two approaches for ITN distribution: mass campaign distribution to achieve universal coverage and continuous distribution to maintain coverage. Continuous distribution of ITNs occurs through the following channels: ANC clinics and the Expanded Program for Immunization, and outreach services for communities with no or little access to health services, such as mobile municipal health units.

PMI supports the NMCP's entomological surveillance activities to strengthen vector control interventions. The NMCP integrated vector control strategy also calls for larviciding applications, indoor residual spraying, and outdoor fumigations to be implemented in targeted areas of epidemic risks and low transmission. However, only small-scale and very focal indoor residual spraying is currently being implemented by a partner donor in southern Angola at border municipalities between Angola and Namibia within the Southern African Development Council Malaria Elimination 8 Initiative (SADC E8), a coalition of eight countries working across national borders to eliminate malaria in southern Africa by 2030.

Larviciding (Huambo and Luanda provinces) and outdoor fumigation (nationwide on an ad hoc basis) are financed exclusively by the GRA with technical support from the Cuban Cooperation.

<u>Strategic Objective 2: Diagnosis and Treatment</u> — Provide early diagnosis to all suspected malaria cases and early treatment of confirmed cases per national guidelines by 2025.

In accordance with WHO guidelines, Angola's NMSP recommends that all suspected cases of malaria be diagnosed parasitologically, using either microscopy or RDTs. Only confirmed, uncomplicated, malaria cases should be treated with an artemisinin-based combination therapy (ACT). The country has three alternative PMI-supported first-line ACT treatments: artesunate-amodiaquine (AS/AQ), artemether-lumefantrine (AL), and dihydroartemisinin-piperaquine (DP). National treatment guidelines for severe malaria recommend (in order of preference) parental (IV or IM) artesunate, intramuscular (IM) artemether, and injectable quinine followed by three days of oral ACTs once tolerated. For pre-referral treatment in children under six years of age, rectal artesunate is recommended at a dosage of 10mg/kg. Malaria case management is provided at both the health facility and community level. In addition to distributing ITNs to pregnant women to help prevent malaria in pregnancy, national policy calls for provision of IPTp with SP at all HFs with ANC services. The target is that by the end of 2025, at least 50 percent of pregnant women with access to ANC and targeted for IPTp receive at least four doses of SP.

Community health workers (CHWs) through the ADECOS project provide education, information, and basic support related to health, water, and sanitation, integrated community case management (iCCM) (as adapted in Angola), and other community development initiatives. Procurement, warehousing, and distribution of RDTs and malaria medicines, and training and support for health care providers and ADECOS are all supported by PMI. The current NMSP 2021–2025 plans to pilot the introduction of rectal artesunate for prereferral of severe malaria cases at the community level by ADECOS in 2022.

<u>Strategic Objective 3: Epidemiological Surveillance</u> — Strengthen epidemiological and entomological surveillance systems, monitoring, and evaluation so 90 percent of health units report timely data, aiming at improving decision-making and NMCP's performance towards achieving the malaria control goals by 2025.

The NMCP has developed a Monitoring and Evaluating (M&E) Plan described in the NMSP 2016-2020 currently being updated to be in line with the NMSP 2021–2025. At the municipal level, there is a malaria municipal supervisor and municipal statistician who regularly collects data reports from the health facilities and enters them in DHIS2. GRA continues to strengthen its epidemiology surveillance system. The National Epidemiological Surveillance System collects weekly reports on clinically diagnosed cases of malaria from the four epidemic-prone provinces in the south — Cuando Cubango, Cunene, Huila, and Namibe. However, since not all municipalities report on a regular basis and there are delays in releasing reports to the NMCP, these weekly data are currently of limited value for detecting and containing malaria epidemics. Support and training for implementation of HMIS using the DHIS2 platform is supported by PMI.

<u>Strategic Objective 4: Promotion of Favorable Behaviors</u> — Reach 80 percent of the population with messages to promote behavior change and the adoption of best practices in malaria prevention and treatment by 2025.

The running NMCP social behavior change (SBC) campaign is *Zero Malária Começa Comigo* (translated as "Zero Malaria Begins With Me"), which integrates different communication channels, from interpersonal communication to digital and mass media, while contextualizing the need for malaria prevention and care-seeking behaviors in the midst of the COVID-19 pandemic. PMI supported the NMCP in drafting the Strategic Communication Plan for Malaria Social and Behavior Change 2017–2020 (SBC Strategy), which outlines NMCP's priorities and goals related to SBC for malaria. PMI and other partners will participate in the development of the new SBC strategy once drafted to align with the NMSP 2021-2025.

<u>Strategic Objective 5: Malaria Elimination</u> — 80 percent of municipalities with low malaria transmission implement active surveillance activities by 2025.

Interventions planned under this strategic objective aim to strengthen entomological surveillance, active surveillance, M&E, and operational research targeting elimination and integrated surveillance of community case management. The NMCP maintains a close partnership with the SADC E8 for cross-border activities between Angola and Namibia. PMI concentrates its resources on supporting six hyper-endemic provinces where malaria transmission remains high.

<u>Strategic Objective 6: Management and Governance</u> – Improve NMCP's governance and management capacity in order to achieve programmatic objectives (at all health system levels) for malaria control and pre-elimination by 2025.

PMI supports the NMCP on the development of the NMSP plan and its objectives and related activities are well-aligned with the PMI priorities. Angola was selected as a PMI partner country in 2005 and PMI-funded activities were carried out at the central level as well as throughout all the provinces in the country until 2016. Given the limited progress made in malaria prevention and control up until then, PMI decided to transition to a sub nationally-focused program — starting in FY 2016. Except for varied and evolving, yet targeted, national interventions, as well as continued support at the central level, this new approach concentrates PMI resources on six hyper-endemic provinces (combining for a total population of approximately 6 million) to maximize impact.

PMI also assists with multiple aspects of the NMCP's strategic plan for supply chain management. Commodity availability analysis, quantifications, inventory management, procurement, warehousing and transportation of commodities, and capacity development of NMCP staff are all supported by PMI to strengthen, or augment, the supply chain.

Table 4: Geographic Target Areas for PMI Interventions

Province Names	Population in 2023 (% of total)	PMI support provided?	Type of support
Cuanza Norte, Lunda Norte, Lunda Sul, Malanje, Uige, Zaire	6,400,328 (19%)	Yes	Procurement and distribution of commodities, Support for prevention interventions (ITNs, IPTp, etc.); Technical assistance for facility and community level service delivery, surveillance, SBC, monitoring and evaluation and improving information systems (HMIS, LMIS, etc.)
Bengo, Benguela, Bié, Cabinda, Cuando Cubango, Cuanza Sul, Cunene, Huambo, Huila, Luanda, Moxico, Namibe	27,693,749 (81%)	Limited	Support to NMCP, central warehouse, MOH's Office of Technology and Information, pharmaceutical management support to the regulatory agency of medicines and health technologies, and other central-level technical assistance also provided (universal ITN campaign planning, training, etc.) PMI-funded RDTs, ACTs, SP, rectal and injectable artesunate are stored at the central level for distribution to these provinces.
Cuanza Norte, Huambo, Luanda, Lunda Sul, Lunda Norte, Malanje, Uige, Zaire	18,496,039 (54%)	Yes	Community-based entomological monitoring in two provinces and insecticide resistance monitoring in seven provinces; technical assistance to National Institute of Health Research (*Juventude Informada, Responsável, e Organizada* or INIS) for molecular work; equipment and technical assistance to support national level insectary (*Instituto de Combate e Controlo das Tripanossomíases*).

ACT: artemisinin-based combination therapy; HMIS: health management information system; ITN: insecticide-treated mosquito net; IPTp: intermittent preventive treatment for pregnant women; LMIS: logistics management information system; RDT: rapid diagnostic test; SP: sulfadoxine-pyrimethamine.
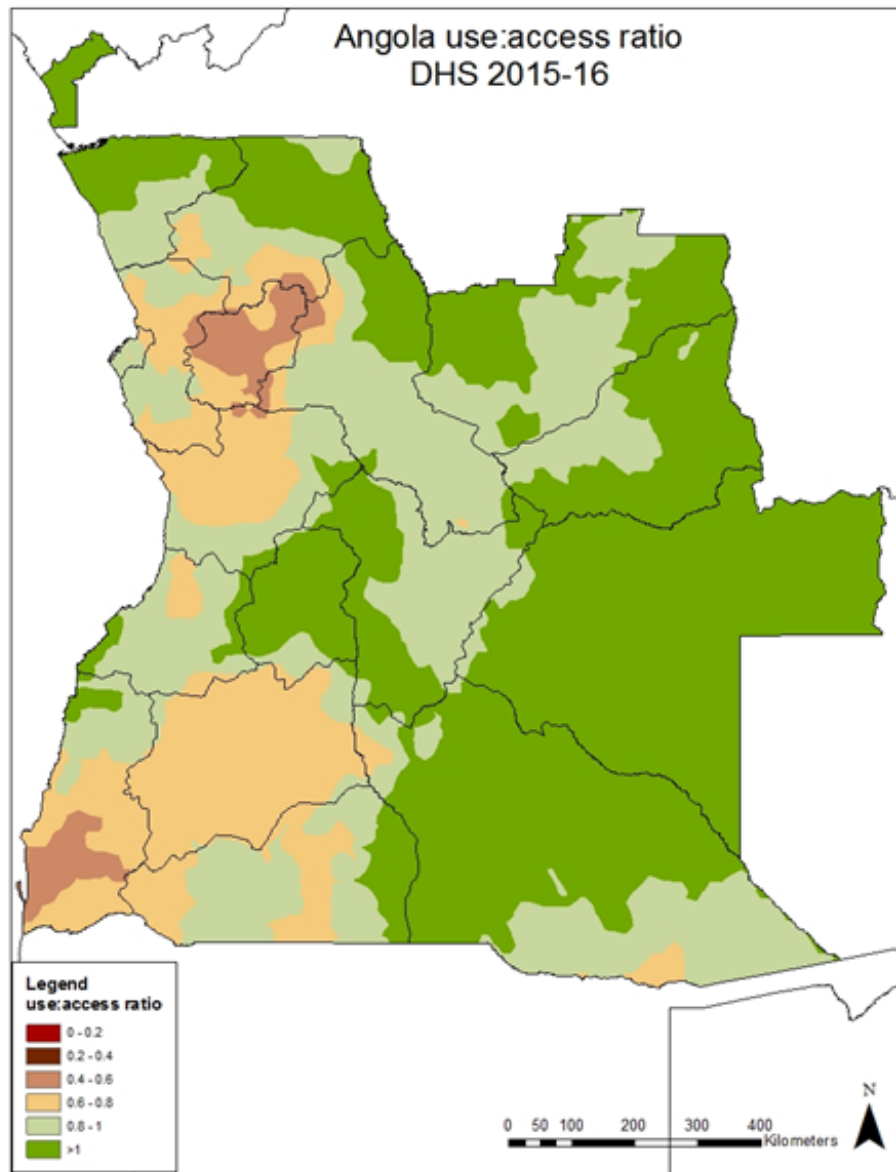
IV. KEY MALARIA DATA

EVOLUTION OF KEY SURVEY-BASED MALARIA INDICATORS

Table 5: Key Survey Indicators

Indicator	2006-2000 MIS	2011 MIS	2015-2016 DHS (IIMS)
% of Households with at least one ITN	28	35	31
% of Households with at least one ITN for every two people	5	6	11
% of Population with access to an ITN	15	19	20
% of Population that slept under an ITN the previous night	12	19	18
% of Children under five years of age who slept under an ITN the previous night	18	26	22
% of Pregnant women who slept under an ITN the previous night	22	26	23
% of Children under five years of age with a fever in the last two weeks for whom advice or treatment was sought	55	59	51
% of Children under five years of age with a fever in the last two weeks who had a finger or heel stick	N/A	26	34
% of Children receiving an ACT among children <5 years of age with a fever in the last two weeks who received any antimalarial drug	6	77	77
% of Women who attended 4 ANC visits during their last pregnancy	N/A	N/A	61
% of Women who received three or more doses of IPTp during their last pregnancy in the last two years	3	19	38
Children under five years of age mortality rate per 1,000 live births	118	91	68
% of Children under five of age with parasitemia by microscopy	N/A	10	N/A
% of Children under five years of age with parasitemia by RDT	31	14	14

ACT: artemisinin-based combination therapy; ANC: antenatal care; DHS: Demographic and Health Survey, *Inquérito de Indicadores Múltiplos e de Saúde* (IIMS); IPTp: intermittent preventive treatment during pregnancy; ITN: insecticide-treated mosquito net; MIS: Malaria Indicator Survey; RDT: rapid diagnostic test.

Figure 4. ITN Use:Access Ratio Map

Source: DHS 2015-2016.

Community-level data are integrated into the broader HMIS, and the numbers in Table 6 below are inclusive of both community- and health facility-level data.

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

Indicator	2018	2019	2020	2021	2022
# of All-cause patient consultations	21,784,513	28,921,473	24,921,960	27,976,314	30,672,278
# of Suspect malaria cases[1]	10,870,446	13,531,799	14,221,626	15,624,710	16,146,103
# of Patients receiving diagnostic test for malaria[2]	10,092,761	13,055,989	13,659,484	14,816,478	14,783.553
# of Malaria cases[3]	5,928,260	7,051,349	7,901,323	9,169,267	9,221,410
# of Confirmed cases[4]	5,150,575	6,575,539	7,349,181	8,325,921	7,858,860
# of Presumed cases[5]	777,685	475,810	552,142	843,346	1,362,550
% of Malaria cases confirmed[6]	86.9%	93.3%	93.0%	90.8%	85.2%
Test positivity rate[7]	52.0%	50.4%	53.8%	53,3%	53.2%
# of Malaria cases among children under five years of age[8]	2,077,660	2,722,463	3,090,312	2,982,491	2,996,535
% of Cases in children under five years of age[9]	53.0%	38.6%	39.1%	32.5%	32.5%
# of Severe cases[10]	392,439	383,259	446,259	456,707	432,302
# of Malaria deaths[11]	11,814	7,923	11,757	13,676	12,474
# of Facilities reporting[12]	2,950	2,952	3,150	3,163	3,163
% of Data completeness[13]	81.6%	81.9%	84.0%	90.6%	92.1%

[1] Number of patients presenting with signs or symptoms possibly due to malaria who were tested for malaria either through RDT or microscopy and the presumptive diagnosis.
[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] # of confirmed cases divided by total # of cases.
[7] Confirmed cases divided by # of patients receiving a diagnostic test for malaria (RDT or microscopy).
[8] Outpatient and inpatient, confirmed and unconfirmed.
[9] Total # of children under five years of age cases divided by total # of cases.
[10] Severe cases are reported as "cases hospitalized for malaria" disaggregated by age groups (children under five years of age, 5 to 14 years of age, and +15 years of age) through the health facility's form sent monthly to the municipality level where it's uploaded into DHIS2 platform.
[11] All ages, outpatient, inpatient, confirmed, and unconfirmed.
[12] Total # of health facilities reporting data into the HMIS/DHIS2 system that year.
[13] # of monthly reports from health facilities divided by # of health facility reports expected (average for the calendar year).

Table 7: Disaggregated Community-Level Data

Indicator	2020	2021	2022
# of Patients receiving diagnostic test for malaria from a CHW	987,787	170,574	90,877
Total # of malaria cases reported by CHWs[1]	751,275	112,309	54,929
% of CHW reported cases (among total malaria cases)[2]	9.5%	1.2%	0.6%

[1] Includes all ages, confirmed and unconfirmed.
[2] Total # malaria cases reported by CHWs/Total # malaria cases in the previous table.
CHW: community health worker.

The number of ADECOS/CHWs in 2020 were 1,388 and decreased to 138 in 2021, which explains the decrease in the ADECOS reporting rate observed in Table 7. The decrease in the number of malaria community cases reported by ADECOS from 2020 to 2021 was due to the phasing out of the Global Fund Project from seven provinces where they supported implementation of 1,250 CHWs in 24 municipalities down to two new provinces with 22 districts (660 ADECOS). Despite being concentrated in two provinces, the ADECOS supported by the Global Fund Project continued reporting through Kobo Collect and not through DHIS2 as per the MOH recommendation and as a consequence, their data is missing in the DHIS2, which explains the community data decrease also observed in 2023.

In sum, at present there are 1,029 ADECOS doing malaria community case management in Angola. PMI, is in the process of scaling up the implementation of community case management from 14 to 20 municipalities (in Calendar Year 2022) that will increase the number of ADECOS from 365 to 540 ADECOS in the provinces of Cuanza Norte, Lunda Norte, Lunda Sul, Melange, Uige and Zaire. Global Fund is supporting 660 ADECOS working in two provinces of Benguela and Cuanza Sul and SADC Elimination 8 is supporting 194 ADECOS in Cunene and Cuando Cubango provinces in five districts along the border with the Republic of Namibia.

V. OTHER IMPLEMENTATION INFORMATION

Therapeutic Efficacy Studies

The effectiveness of ACTs is monitored regularly every two years in Angola, usually by the NMCP with strong support from the U.S. Centers for Disease Control and Prevention (CDC). AL has shown efficacy less than 90 percent in Zaire in 2013, 2015, and 2021 and in Lunda Sul in 2019, leading PMI to only procure AS/AQ. Capacity of the NMCP, together with the National Institute for Health Research, to lead the TES in 2021 was accelerated by the COVID-19 pandemic context and the inability of CDC to provide direct support to implementation. This success has led to improving local capacities resulting in the sustainability of timely and regular antimalarial efficacy monitoring in Angola.

Polymerase chain reaction (PCR)-corrected data from 2021 TES, showed that there was no clinical evidence of artemisinin resistance, since Day 3 slide-positive rates ranged from 98-100% across all study sites and arms. This is the fourth of five rounds of TES in Angola showing a corrected AL efficacy below 90 percent in a site. For Zaire Province, AL has had an efficacy below 90 percent in 2013, 2015, and 2021. AS/AQ, DP, and AS-PY all had corrected efficacies above 90 percent and the results suggest that they are appropriate choices for ACTs in Angola. See Table 8 below with a summary of results from the last two TESs.

Planned next steps for continued capacity strengthening to allow Angola to independently implement the biannual TES includes a south-south collaboration with Manhica Health Research Center in Mozambique to allow trained Angolan laboratory technicians to perform molecular analyses with Mozambican colleagues using the Angola TES 2021 samples. TES 2023 data collection is ongoing and is expected to be finalized by March 2024.

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
2019[1]	Benguela	AL	98% (96, 100)
2019[1]	Benguela	AS/AQ	100%
2019[1]	Zaire	AL	92% (87, 98)
2019[1]	Zaire	AS/AQ	96% (91, 100)
2019[1]	Lunda Sul	AL	88% (81, 95)
2019[5]	Lunda Sul	AS/AQ	100%
2021	Benguela	AS-PY, DP	AS-PY 99.6% (99-100) DP 98.3% (96-100)
2021	Zaire	AL, AS/AQ	AL 88% (82-97) AS/AQ 91% (85-97)
2021	Lunda Sul	AL, AS/AQ	AL 94.4% (90-99) AS/AQ 100%
2023	Benguela	AL, DP	TBD
2023	Zaire	AS/AQ, AL	TBD
2023	Lunda Sul	AL, AS-PY*	TBD

AL: artemether-lumefantrine; AS/AQ: artesunate-amodiaquine; AS-PY: artesunate-pyronaridine; DP: dihydroartemisinin-piperaquine; PCR: polymerase chain reaction; TBD: to be determined.
* AS/AQ in Zaire Province will be used as an alternative to AS-PY) if approval from the regulatory agency of medicines and health technologies is not done by the time data collection starts.

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[5] Dimbu PR, Horth R, Cândido ALM, Ferreira CM, Caquece F, Garcia LEA, André K, Pembele G, Jandondo D, Bondo BJ, Nieto Andrade B, Labuda S, Ponce de León G, Kelley J, Patel D, Svigel SS, Talundzic E, Lucchi N, Morais JFM, Fortes F, Martins JF, Pluciński MM. Continued Low Efficacy of Artemether-Lumefantrine in Angola in 2019. Antimicrob Agents Chemother. 2021 Jan 20;65(2):e01949-20. doi: 10.1128/AAC.01949-20.

VI. KEY POLICIES

Table 9: Policies in Angola

National Strategic Plan (2021-2025)	
National Surveillance, Monitoring, and Evaluation Plan (2022-2025)	
National Social Behavior Change/Communication Strategy (2017-2020)	
National Guidelines for Diagnosis and Treatment of Malaria (updated in 2023)	
National Supply Chain Strategy/Master Plan 2023-2027 (drafted in progress)	
National Plan for Integrated Vector Control Management (2020-2024)	
National Plan for Monitoring and Management of Insecticide Resistance (2022-2025)	
IRS and ITNs' Distribution Waste Management Manual (2022-2025)	
What is/are the first-line treatment(s) for uncomplicated *P. falciparum* malaria*?	AL AS/AQ DP
What is/are the second-line treatment(s) for uncomplicated *P. falciparum* malaria*?	Angola only has the recommended ACTs and any of the first-line available can be used to treat uncomplicated malaria.
What is/are the first-line treatment(s) for uncomplicated *P. vivax* malaria?	ACT (one of the first-line treatments above) plus Primaquine 15 mg / daily for 14 days.
What is the first-line treatment for severe malaria?	Artesunate intravenous (IV) or intramuscular (IM)
In pregnancy, what is the current first-line treatment for uncomplicated *P. falciparum* malaria in the <u>first trimester</u>?	AL * Oral Quinine+Clindamycine if AL is contraindicated
In pregnancy, what is/are the first-line treatment(s) for uncomplicated *P. falciparum* malaria in the <u>second and third trimesters</u>?	AL AS/AQ DP
What is/are the first-line treatment(s) for *P. vivax* malaria during pregnancy?	ACT (AL, AS/AQ or DHA)
In pregnancy, what is the first-line treatment for severe malaria?	Injectable Artesunate (IV or IM)
Is pre-referral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)?	Artemether IM Artesunate suppository 100mg
Is pre-referral treatment of severe disease with rectal artesunate recommended for community health workers?	Yes (currently being piloted)
Community Health Policy (2016)	
What is the # of CHWs currently providing iCCM?	In May 2023, 1,209 ADECOS (365 supported by PMI, 184 by SADC E8, and 660 by the Global Fund).

What is the country's target for the number of CHWs providing iCCM?	1,080 ADECOS in the first phase of implementation and 14,100 ADECOS by 2025 to reach all rural vulnerable people.
What percent of the country's target is met?	8.6 percent (1,209 out of 14,100 by the end of 2022)
Does the country have a policy that enables the routine, regular payment of salaries/stipends for CHWs?	Yes, *Política Nacional dos Agentes de Desenvolvimento Comunitário e da Saúde*, the National Policy of Community Health and Development Agents.
Do CHWs have the authority to test and treat all ages for malaria?	Yes, but in two provinces community case management is only being done for children under five years of age.
Prevention of Malaria in Pregnancy Policy (National Diagnosis and Treatment Guidelines and Manual for the Prevention and Treatment of Malaria in Pregnancy, 2023)	
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?	13th week 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, reflects the WHO 2016 recommendation of at least eight ANC contacts.
What is the status of training ANC providers on the WHO recommended 8+ contacts?	The current National Diagnosis and Treatment Guidelines (2023) and the Manual for the Prevention and Treatment of Malaria in Pregnancy (2023) and the e-training platforms include an orientation package for health workers used for training ANC providers to encourage at least eight contacts.
Have HMIS/DHIS2 and ANC registers been updated to include 8+ contacts?	The Angolan HMIS/DHIS2 have been updated to include at least eight contacts. The ANC registers are not updated to include at least eight contacts and reflect more than four ANC visits.
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?	IPTp data is collected as single months representing the number of doses administered for each category (IPTp1, IPTp2, IPTp3 and IPTp4 or more).
Is ANC/IPTp provided by facility staff conducting ANC outreach to communities?	No, IPTp is not implemented through facility staff conducting ANC outreach to communities
Can CHWs deliver IPTp and if so, which specific cadres and beginning with which dose?	No; But the NMCP has expressed an interest in piloting community-based IPTp in the near future.

AL: Artemether-lumefantrine; AS-AQ; ANC: antenatal care; CHW: community health worker; DP: Dihydroartemisinin + Piperaquine; DHIS: district health information system; HMIS2: health management information system; IPTp: intermittent preventive treatment for pregnant women; IRS: indoor residual spraying; ITN: insecticide-treated mosquito net; NMCP: National Malaria Control Program; SADC E8: Southern African Development Council Malaria Elimination 8 Initiative; WHO: World Health Organization.

VII. PARTNER LANDSCAPE

PMI and NMCP recognize the importance of partner alignment for malaria control, emphasizing that different partners bring complementary expertise and resources.

The table below summarizes contributions by key external partners and partner country governments in Calendar Years 2021–2024, providing insight into total country investments. The Global Fund 2021–2024 grant cycle is currently being implemented (in the provinces of Benguela and Cuanza Sul). Furthermore, MOH is in the process of submitting the concept note for 2025-2027 which will extend coverage to a third province (Bie) with a malaria allocation of approximately $40 Million.

The country government invests substantial funding into the national-to-local infrastructure and service delivery to benefit malaria programs. However, it is not always possible to tease out funding attribution for malaria specifically from the host government without a standardized method. There may be similar challenges in understanding other partners' funding levels.

The U.S. government and NMCP remain strongly committed to continue for additional private sector engagement. A success worth highlighting is the developed key sustained and effective partnerships with the private sector (e.g., UNITEL, largest mobile service provider of Angola; commercial bank *Banco Fomento de Angola*; and ExxonMobil) as an illustration of the combined engagement on malaria control. The public-private partnership with UNITEL leverages technology and workforce in support of the national malaria control efforts, such as the national ITN campaigns and the transition to digital data systems. It also includes engaging target populations with malaria-specific behavior change messages via channels such as SMS, TV, and radio. UNITEL also provides URLs for the deployment of DHIS2 as well as access to the online health workers training platform, KASSAI.

Under its corporate social responsibility, ExxonMobil, through its Block 15 and ExxonMobil Foundation, continues to be a key and reliable GRA partner in support of the reduction of malaria cases and decrease of malaria-related morbidity supporting malaria prevention and the National Malaria Partners Forum. Complementary to this ongoing effort, *Banco Fomento de Angola* has left its footprint in support of the national ITN campaign operations cost in the six PMI-focus provinces.

The key public sector partners which support NMCP on behavior change messages dissemination are the national public television station (TPA) and the national public radio (RNA) which both regularly air free (under public service announcements approaches) malaria spots nationwide conveying the three target malaria prevention messages.

Table 10: Partner Landscape

Partner	Key technical interventions	Geographic coverage	Funding amount or in-kind contribution	Timeframe
Global Fund	• Support for ITN mass campaign in 2022 and 2025 followed by continuous distribution • Procurement ACT and RDT needs for both community and facility level, injectable artesunate, and SP • Case management • Entomological monitoring • Cross-cutting HSS	Benguela and Cuanza Sul provinces (from 2021-2024)	$31 million	June 2021 to May 2024
		Benguela, Bie, and Cuanza Sul provinces (from 2024-2027)	$37 million	June 2024 to May 2027
Government of Angola	• Vector control • Case Management • IPTp-MIP • Surveillance, monitoring and evaluation/research • Cross-cutting HSS • Commodity procurement	Countrywide	Not available	Not available
ExxonMobil	• Malaria prevention and control activities	Six PMI-focus provinces (Cuanza Norte, Lunda Norte, Lunda Sul, Malange, Uige and Zaire)	$500,000	2020-2022
	• Semiology course in Kassai platform	N.A.	$100,000	2022-2023
Southern African Development Community Elimination 8	• IRS (up until 2022) • Case Management at community level • Surveillance at health facility and Community levels	Cunene Province (Curoca, Ombadaja, Namacunde districts) and Cuando Cubango Province (Rivungo, Cuangar, Dirico and Calai districts)	$2.7 million	October 2021 - September 2024
UNITEL	Allows DHIS2 users to access the platform for free as long as the SIM card is valid. 2022 ITN mass campaign: Free Application Access; ITN procurements Smartphones for activists	Countrywide	Not available	Not available
		Six PMI-focus provinces (Cuanza Norte, Lunda Norte, Lunda Sul, Malange, Uige and Zaire)		

DHIS2: ; ITN: insecticide-treated mosquito net; IRS: indoor residual spraying; KASSAI: online health workers training platform; MIP: malaria in pregnancy.