



MINISTRI BLONG HELT

VANUATU

Annual Program Report 2023

Malaria and other Vector Borne Diseases
Control Program

Foreword

The Malaria and Other Vector Borne Diseases Program is pleased to provide this annual report of activities, achievements and challenges for 2023. In the past decade, Vanuatu has experienced drastic reductions in malaria incidence through concerted efforts guided by the *National Malaria Strategic Plan (2015-2020)* and earlier plans. In 2021, the Program entered a new era under the *National Strategic Plan for Malaria Elimination (2021-2026)*. This elimination strategy presents ambitious goals and targets with the aim to eliminate malaria from Vanuatu by the end of 2023.

Progress in the first year of the strategy was good. There were just 322 cases reported nationwide and the API was further reduced to 1.1 per 1000 population, despite multiple challenges to implementing activities and to the health system more broadly - including the COVID-19 pandemic. However, in 2023 upsurges of malaria occurred in multiple areas of the country. This included spreading and increase in cases in Santo, Malekula and Epi islands, and re-establishment of transmission in Vanua Lava, Pentecost, Maewo and Ambae. The total number of cases in 2023 triple compared to 2022, with 1,995 cases confirmed. All cases reported have been *Plasmodium vivax* with no deaths noted. However, it is clear that Vanuatu is now off-track to meet the elimination target set for the end of 2023. With that was a programmatic review that readjust the elimination road map in respective provinces, with new recommendations and forward plans.

This report sets out the malaria situation in 2023, and the activities completed to address the upsurges and the challenges faced. The intention is that this will serve to inform optimization of activities in 2023 and beyond, and potentially inform adjustments to elimination timelines and targets. The challenges now faced reiterate the importance of continuously working together to strengthen the health systems at all levels of service delivery. We must continue to evaluate and review in order to identify gaps, challenges and weaknesses, as well as to identify windows of opportunity towards success.

The Program wishes to acknowledge the continuous support of health development partners who remain committed to malaria elimination and reduction of vector-borne diseases. Significant technical and financial contributions were provided by the Global Fund through UNDP and from Rotarians Against Malaria (RAM) and the World Health Organization (WHO). This support was key in enabling continued and emergency responses in 2023.

Malaria is preventable, treatable, and can be defeated. I strongly believe that with continuous commitment from the Government of Vanuatu and ongoing support from development partners, we will get back on track to achieving a malaria-free Vanuatu.



Mr Wesley Donald

Coordinator

Malaria and Other Vector Borne Diseases Control Program



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Introduction

Malaria has historically been one of the leading causes of illness in Vanuatu. Since 2004, the Ministry of Health (MOH) and its partners have implemented an intensified program to progressively control and reduce malaria. This has included: widespread access to diagnosis by microscopy or rapid diagnostic test (RDT); highly effective treatment with artemisinin-based combination therapy (ACT); high coverage with long-lasting insecticidal mosquito nets (LLINs) in selected health zones based on stratification; widespread community engagement; surveillance and response; and intensive targeted technical assistance.

The number of cases dropped countrywide from over 15,000 in 2003 to fewer than 1,000 in 2014. There was a sharp dip in reported cases observed in 2015 which was likely due to reduced surveillance and control activities resulting from widespread disruption caused by Tropical Cyclone Pam in March 2015. Since then, the API dropped from 6.8 in 2016 to 1.05 in 2021. However, there were upsurges of cases since 2021 due to COVID-19 pandemic, and where routine services were disrupted, and resources were reoriented towards the pandemic.

In the southern province of Tafea, the last local cases of malaria were reported in 2014. Tafea was declared malaria-free in November 2017 following three years of no local cases. Province-wide elimination has provided a model that can be adopted elsewhere in the country. This is based on timely delivery of proven interventions by trained personnel to achieve high coverage and impact (see [Case study: Successful elimination of Malaria, Tafea province, Vanuatu](#)).

In 2022, there was a significant increase in API to 5.0 per 1,000 population. Most of the cases were reported on Santo (Sanma), Vanua Lava (Torba), Malekula (Malampa) and Epi (Shefa) islands, although cases have also been reported in Ambae (Penama) and elsewhere in those five provinces. The API is therefore significantly above the national API target of 0.5 set out in the *National Strategic Plan for Malaria Elimination (2021-2026)* for 2022. There have been no confirmed malaria-related deaths in Vanuatu reported since 2012.

Progress against malaria in 2023 was constrained by a number of factors. The twin Tropical cyclone category 4&5 Kevin and Judy in early 2023 obstructs routine health services and response to cases in the active foci areas. This post disaster response leads to refocusing of health services in the affected provinces. Unpredicted weather patterns, uncontrolled population movement, and hard to reach populations in isolated geographical areas continue to challenge the program towards reaching elimination.

Other challenges that undermined the ability of the Program to deliver malaria interventions included limited funds from the Government recurrent funds to conduct prompt case investigations, limited human resources, ongoing delays in disbursement of funds that restricted timely implementation of activities, particularly for case investigations and response in areas with other logistic and geographical constraints.

As outlined in the 2023 Annual Program Report, the gains that had been made against malaria in Vanuatu were – and continue to be – fragile. While progress had been remarkable to 2021, in 2023 despite continued efforts there has been an unfortunately backslide with the number of cases increasing rapidly in multiple areas of the country. A reinvigorated and concerted effort will be required over the ensuing years to achieve the vision of a malaria-free Vanuatu contributing to the good health and well-being of the population.

This annual report provides an overview of malaria in Vanuatu in 2023 and program achievements against some of the key performance indicators as set out in the National Strategic Plan for Malaria Elimination Monitoring and Evaluation plan. Outcome and output indicators are presented in the context of the five key interventions: vector control; case-based surveillance; case management; health promotions and community engagement; and, disaster preparedness. Progress against impact indicators is discussed in reference to broader trends and baselines, while considering factors that may have influenced overall performance against these targets.

Financial and technical contributions from the Ministry of Health and development partners are presented. In particular, support from the Global Fund to Fight AIDS, Tuberculosis and Malaria, Rotarians Against Malaria, the World Health Organization, and Australia Aid (through the Vanuatu Health Program) is gratefully acknowledged.

Program objectives

The program objectives are as set out in the *National Strategic Plan for Malaria Elimination (2021-2026)* and as summarized below.

2.1 Vision

A malaria free Vanuatu, contributing to the good health and well-being of the population.






2.2 Goals

1. Prevent re-establishment of transmission in all provinces where transmission has been interrupted.
2. Achieve zero indigenous malaria cases in all provinces of Vanuatu by the end of 2023.
3. Receive World Health Organization (WHO) certification of malaria-free status in 2026.



2.3 Mission statement

The malaria program aims to progressively control and eliminate malaria in all provinces of Vanuatu (Table 1). The Program works in close partnership with provincial health services and local communities to ensure that universal access to health promotion, prevention with long-lasting insecticidal bed nets, and quality-assured diagnosis and treatment is maintained. It aims to use indoor residual spraying to accelerate reduction in malaria transmission in selected areas. It seeks to strengthen and maintain excellent surveillance and apply new knowledge as it becomes available in order to achieve malaria elimination and prevention of reintroduction.

2.4 Strategic objectives (key interventions)

	<i>Intervention</i>	<i>Objective</i>
	Vector control and personal protection	To maintain very high levels of coverage with long-lasting insecticidal mosquito nets (LLIN); <u>and</u> to rapidly reduce malaria transmission in selected higher-incidence areas and foci using indoor residual spraying (IRS). ¹
	Case-based surveillance	To roll out case-based surveillance and response nationwide using the '1-7-60' approach. ²
	Early and effective malaria case management	To test all fever cases for malaria by rapid diagnostic test (RDT) or microscopy, and provide prompt radical treatment and care for all confirmed cases according to the national Malaria Diagnosis and Treatment Guidelines.
	Health promotion and community engagement	To mobilize communities through health promotion and leverage the support of all stakeholders in a multi-sectoral effort to accelerate the elimination of malaria.
	Disaster relief preparedness and response	To ensure that malaria and other VBD prevention, surveillance and case management are well integrated into disaster preparedness and response activities.

2.5 Strategic objectives (supporting elements)

	<i>Intervention</i>	<i>Objective</i>
	Strengthen program management	To maintain a high level of political commitment to malaria elimination; <u>and</u> to strengthen program management at national level and implementation at provincial and local levels through improved mechanisms for workforce management, program planning, disbursement of funds, information and data management, technical assistance and cooperation, procurement and supply chain management, and performance monitoring.
	Operational research	To leverage technical partnerships in support of innovation by generating new knowledge and applying it to improve delivery and quality of malaria services.

¹ In Vanuatu's elimination context, higher incidence areas are defined as health zones with a persistent annual parasite incidence (API) of 1 or more (cases per thousand population) and residual foci of infection.

² Case-based surveillance will follow a '1-7-60' strategy, with every case to be: reported to provincial level within 1 day of detection; investigated, classified and responded to as appropriate within 7 days of detection; and followed-up to verify outcome within 60 days after detection.

2.6 Timelines and targets

Table 1. Key targets outlined in the *National Strategic Plan for Malaria Elimination (2021-2026)*

	2021	2022	2023	2024	2025	2026
National API in cases/ 1,000 pop	≤ 1	≤ 0.5	≤ 0.2	≤ 0.1	≤ 0.1	≤ 0.1
Indigenous cases*	≤ 280	≤ 140	≤ 56	0	0	0
Achieve zero indigenous cases	Penama, Torba	Shefa	Malampa, Sanma			National certification
Maintain prevention of re-establishment	Tafea	Tafea, Torba, Penama	Tafea, Torba, Penama, Shefa	All	All	All

* The target number of cases per year may be adjusted depending on the population, with adjustment according to population growth and estimates based on available evidence.

Key outcomes and achievements in 2023

Key program achievements in 2023 included:

- Continuation of routine program response activities to twin category 4 & 5 TC Judy and Kevin in early 2023.
- Consultations with Provincial Health Managements in the establishments of Malaria Elimination Committee in targeted active foci areas
- Annual Malaria Meeting resolutions in designing malaria elimination roll out plans in targeted active foci areas in 2024.
- Despite of the population migration and hard to reach areas over 65% of cases have been fully investigated and classified across 5 provinces
- Maintaining zero (0) *Plasmodium falciparum* (Pf) or Mix infections since 2022.
- 52,907 LLINs distributed in targeted health zones in 2023 during mass distributions, achieving 92% of the indicator targeted.
- 8,379 LLINs distributed to target risk groups through continuous distributions, achieving 60% of the indicator targeted.
- Maintaining zero (0) death since 2012.

Table 2. Key impact indicators and annual targets

INDICATORS	2021	2022	2023	2024	2025	2026
Annual parasite incidence	≤1	≤0.5	≤0.2	≤0.1	≤0.1	≤0.1
Indigenous malaria cases*	≤280	≤140	≤56	0	0	0
Number of provinces with zero locally transmitted cases of malaria	3	4	6	6	6	6
Inpatient malaria deaths per year: rate per 100,000 persons per year	0	0	0	0	0	0
Malaria test positivity rate	≤1.25	≤1	≤1	0	0	0
Number of active foci of malaria	36	18	8	0	0	0
Number of people and percentage of population living in an active focus	TBC	TBC	TBC	TBC	TBC	TBC

API: Confirmed malaria cases (microscopy or RDT): rate per 1000 persons per year

* This has been updated for 2023 based on recent population estimated from the Vanuatu National Statistics Office, as informed by the 2019 Population and Housing Census.

Table 3. Key outcome indicators and annual targets, by intervention

OUTCOME						
KEY INTERVENTION 1: Malaria vector control and personal protection						
Percentage of population living in receptive areas covered by appropriate vector control	100%	100%	100%	100%	100%	100%
KEY INTERVENTION 2: Case-based surveillance for elimination						
Annual blood examination rate: per 100 population per year	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Percentage of expected MMLL reports that are actually received	100%	100%	100%	100%	100%	100%

Percentage of cases notified to provincial officers within 24 hours of confirmation	100%	100%	100%	100%	100%	100%
Percentage of confirmed cases investigated, classified and managed within 7-days of notification	90%	95%	100%	100%	100%	100%
Percentage of cases investigated, classified and managed within 7-days of notification that are followed up within 60 days	75%	90%	100%	100%	100%	100%
Percentage of malaria foci fully investigated, classified and managed as within 60 days	90%	95%	100%	100%	100%	100%
KEY INTERVENTION 3: Early and effective malaria case management						
Proportion of suspected malaria cases that receive a parasitological test	100%	100%	100%	100%	100%	100%
Percentage of hospitals with microscopy results cross-checked by national reference laboratory	100%	100%	100%	100%	100%	100%
Proportion of confirmed malaria cases that received first-line antimalarial treatment	100%	100%	100%	100%	100%	100%

All indicators are included in Annex 1. Due to the significantly changed situation in 2022, some targets may need to be revised. This will be examined in the Malaria Program Review planned for early 2023.

Malaria situation in 2023

Key national-level indicators are presented below in reference to the targets set in the *National Strategic Plan for Malaria Elimination (2021-2026)*. Further details are provided in the sections below.

Table 4. National outcome indicators, targets and 2023 progress.

INDICATORS	2023 TARGET	2023 SITUATION
Annual parasite incidence	≤0.2	6.0
Indigenous malaria cases	≤56	1987
Number of provinces with zero locally transmitted cases of malaria	6	1
Inpatient malaria deaths per year: rate per 100,000 persons per year	0	0
Malaria test positivity rate	≤1	0.6
Number of active foci of malaria (based on health zones)	8	17

4.1 Annual parasite incidence (API)

There was a remarkable reduction in malaria have been evident since 2016, with a decline in annual parasite incidence (API) from 6.8 per 1,000 populations in 2016 to 1.05 per 1,000 populations in 2021. The incidence rate increased from 1.05 in 2021 to 5.0 per 1,000 populations in 2022. With the on-going challenges in 2022 during COVID-19 Pandemic, twin TC Kevin & Judy in early 2023 and system challenges, the API further increased to 7.1 per 1,000 population. The API in Torba is high due to high positivity rate within small populations.

Table 5. API by province for 2016 - 2023

Province	2016	2017	2018	2019	2020	2021	2022	2023
Malampa	24.3	10.7	5.1	4.9	3.7	1.07	4.18	2.09
Sanma	15.7	10.7	3.8	4.2	4.7	2.24	7.55	17.78
Penama	0.6	0.78	0.17	0.03	0.05	0	0.35	1.31
Shefa	0.4	0.18	1.7	1.0	0.43	1.24	1.98	0.34
Tafea	0.0	0.03	0.08	0.03	0.03	0	0	0.02
Torba	0.7	0.0	0.72	0.97	0.87	0.34	20.95	60.38
Vanuatu	6.8	3.8	2.2	1.9	1.7	1.05	5.03	7.14

Note: API formula: Total malaria cases/Total population*1000

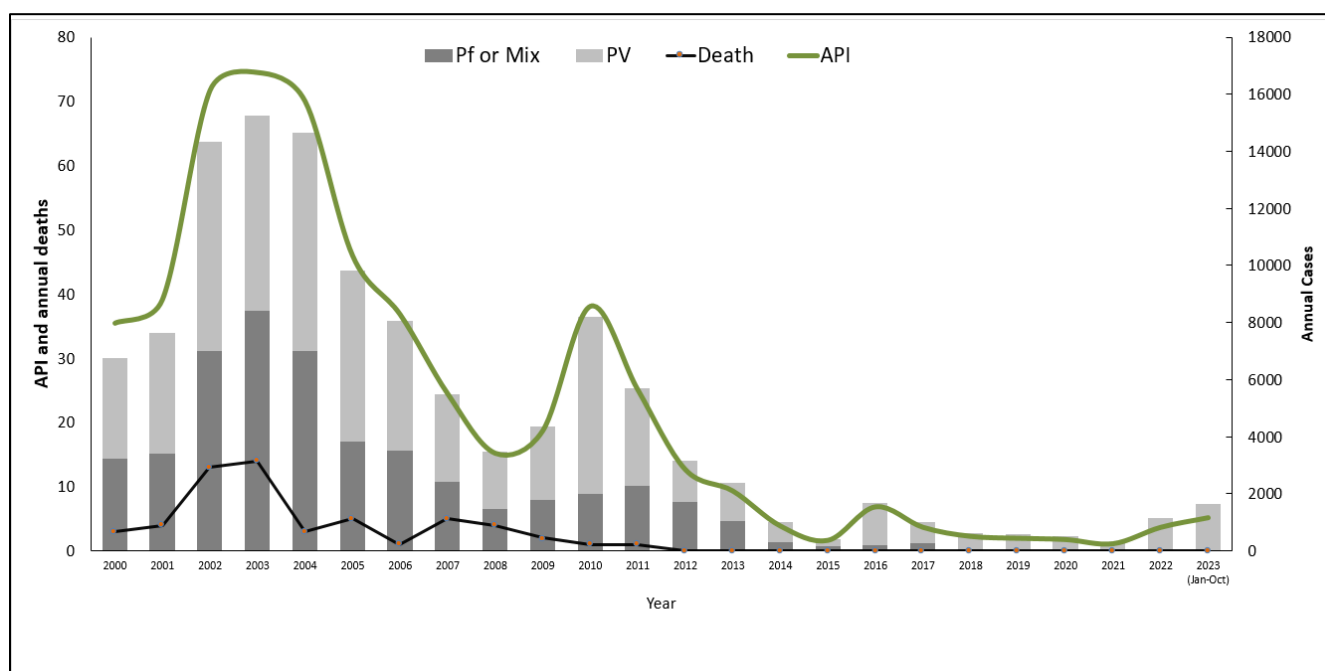
4.2 Malaria cases and deaths

Vanuatu continued to maintain maintained at zero (0) since 2012. The total number of reported cases decreased from almost 2,000 in 2016 to 322 in 2021 but then increased to 1,143 in 2022 and continue to increase to 1,995 in 2023. The continuous increase were due to treatment compliances, challenges in routine supply chain of drugs, climate change, and other contributing factors such as damaged facilities during natural disasters and population migration in high to moderate to low endemic areas. Other hard- to- reach areas for case-based surveillance and response were also a challenge.

Despite of that Tafea Province continue to maintain prevention of re-establishment and maintain zero indigenous case, while other foci areas continue to maintain minimal number of cases in 2023. The increase was more in quarter 1 and 2 of 2023 after the category 4&5 twin TC Kevin and Judy during the wet seasons, and changes in the last two (2) quarters after the impact of surveillance and response in active foci areas, with other supporting interventions such as continued program activities with community supports.

Since 2010, the predominant parasite species detected in Vanuatu has been *P. vivax* with fewer cases identified as *P. falciparum*. In 2023, the Country continue to maintain zero (0) *P. falciparum* cases. All reported confirmed cases were *P. vivax*.

Figure 1. Number of malaria cases by species (*P. falciparum* & *P. vivax*), deaths, and API for 2000-2023.



4.3 Test positivity rate

There were 19,800 parasitological tests conducted in 2023 through Active Case Detections (ACD) and Passive Case Detections (PCD). Of the tested patients there were a total number of 1,995 confirmed cases being diagnosed using both RDT and Microscopy. In 2023, the TPR achieved was 20% based on the reported confirmed cases. This increase may have been influenced by the number of people presenting to health facilities with fevers for testing in 2023 with the key messages to test every patient presenting with fever. Other favorable causes were mentioned in other relevant sections below.

While there were some concerns over a new brand of RDTs for detection *P. falciparum* and/or *P. vivax* infections, the detection of many cases and the moderate TPR indicate that testing is still of use. There has been concern from nurses in the current RDT use due to its sensitivity and specificity, and the Ministry is considering that for change.

4.4 Malaria case distribution

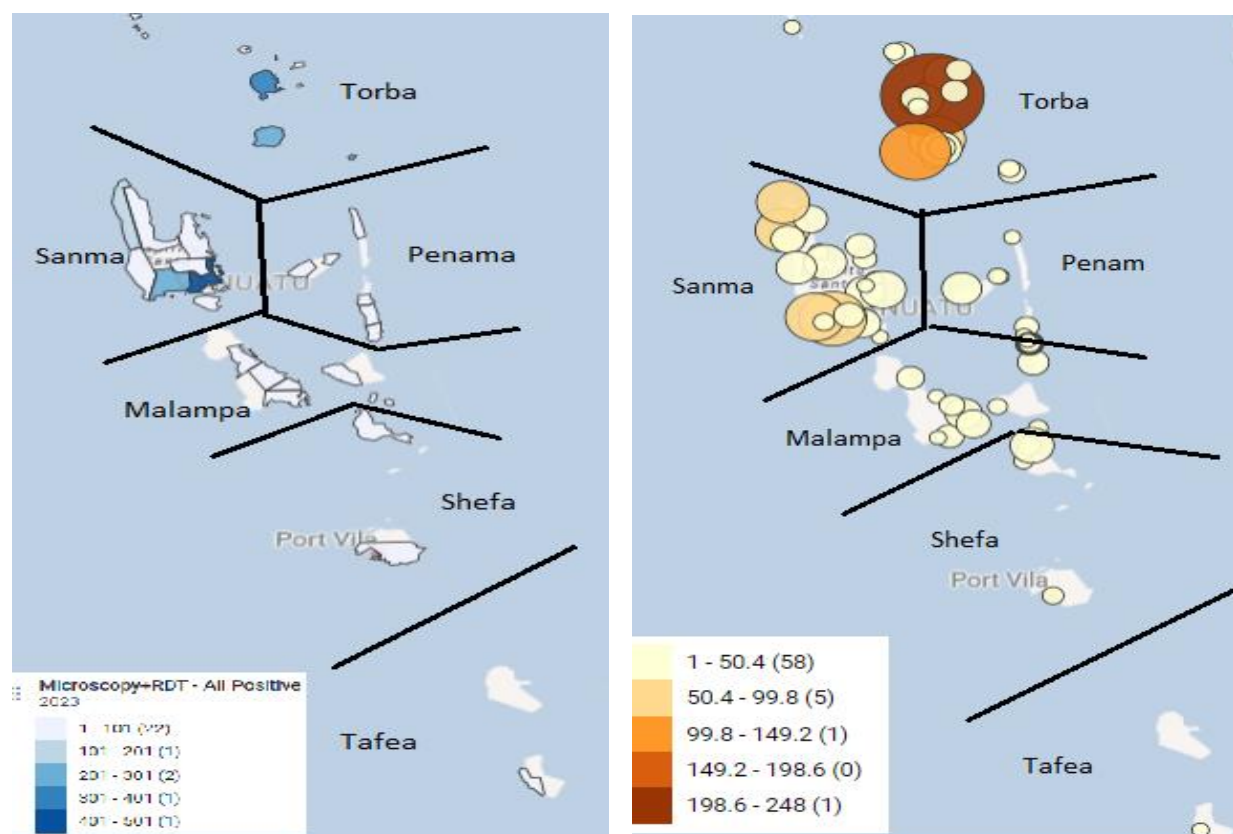
Spatial distribution

Malaria disease distribution in Vanuatu is not uniform but varies by province and health zone either in clusters or in sporadic forms and exhibits periodicity. Transmission is usually highest close to the coastal zone and slow to inland areas due to population movements from the high lands to coastal areas and back.

Between 2017 and 2021, malaria burden was concentrated in the islands of Santo in Sanma Province, Malekula in Malampa and Epi in Shefa Province. However, in late 2022 and mid 2023 the number of few imported cases from Sanma has become indigenous case in Torba Province, resulting in high transmissions and parasite rate (Figure 2). On the other hand, as seen in Figure 2, Tafea province has continued to maintain zero local case from 2017 onwards.

Since 2020, malaria transmission has been re-established on some islands after years with no reported cases, such as Paama Island and Ambrym Island (Malampa province). However, in 2022 – or perhaps even earlier - there was geographical spread to other areas that included Vanua Lavae and Ambae & Pentecost.

Figure 2. Malaria case map showing distribution of cases by health zone and health facility, for 2023.



2023 Drivers of transmission

Most cases are domestic imported cases due to frequent travelers from other nearby islands with pockets of transmission in active foci areas. Undetected asymptomatic infections and challenges in parasitological testing and treatment at some health facilities, Aid Posts in particular also contribute to continuous transmission on the islands. Damaged health facilities due to tropical cyclones also constrain the access to prompt diagnosis and appropriate treatments.

Several other contributing factors believed to influence the situation, such as unexpected continuous rainfall patterns and experienced twin category 4&5 Tropical Cyclones (TC) in early 2023. Vulnerable mosquito breeding sites along the transmission areas with riverbanks, and an extreme temperature and humidity gradient between the north and south of the country. In addition, those living a nomadic lifestyle in highland areas and the uncontrollable population movements among communities and villagers in transmission zones also challenges the delivery of malaria health services and response activities.

In spite of these challenges, the Program aimed in 2022 to continue as per the work plan to pro-actively address constraints by conducting more communication and advocacy through health zone meetings with communities and stakeholders, by providing more

trainings and supervision, and by conducting focal Indoor Residual Spraying (IRS) in active foci areas in Sanma, Shefa, Torba and Malampa provinces.

4.5 Stratification of at-risk population

Malaria is at risks to everyone, including domestic and international travelers. However, there are certain groups of populations at higher risk of malaria such as children under five, pregnant women, the elderly, and even those living in malaria free areas. It is important to identify these groups and prioritize target interventions for the highest impact. In a control setting, these are identified through higher APIs by province and by health zone; for an elimination program, foci classifications are used.

The 2023 Malaria Stratification Plan uses receptivity risk categories based on API but shifts the thresholds downwards relative to the previous Plan. Therefore, the cut-offs for high risk (API ≥ 5) and medium risk (API ≥ 0.5) have been shifted downwards. Three urban centers are also identified as being particularly vulnerable to importation of malaria, with Port Vila and Luganville considered high vulnerability and Lenakel considered medium vulnerability. In 2023 the Luganville urban areas are considered high risks. As there is a shift to identifying foci based on villages (rather than health zones), any populations in foci outside of high-risk areas are also be added to the high-risk strata.

Table 6. Population at risk in 2023

Risk Strata	Receptive Populations	Vulnerable Urban Populations	Vulnerable Foci Population	Targeted pop (of national pop)
High only	18 highest incidence HZs (≥ 5 API)	Port Vila and Luganville	Additional village foci outside of high HZs	169,062 (55.7%)
Medium and high	36 high and medium incidence HZs (≥ 0.5 API)	Port Vila, Luganville and Lenakel	Additional village foci outside of high and medium HZs	247,543 (81.6%)
All at risk (low, medium and high)	All 49 health zones	Port Vila, Luganville and Lenakel	All foci villages	279,371 (100%)

Program key deliverables and achievements by intervention area

5.1 Intervention 1: Malaria vector control and personal protection



Long-lasting insecticide treated nets (LLINs) and indoor residual spraying (IRS) are core interventions for reducing vectorial capacity and transmission.

Table 7. Outcome and progress indicators, targets and 2023 progress.

INDICATORS	Baseline	2023 TARGET	2023 SITUATION
Proportion of population with access to an ITN within their household (Survey-derived only)	83%	80%	77%
Proportion of population that slept under an insecticide-treated net the previous night (Survey-derived only)	44.30%	80.0%	64%
Proportion of population using an insecticide-treated net among those with access to an insecticide-treated net	68.40%	80.0%	83%
Proportion of pregnant women who slept under an insecticide-treated net the previous night (Survey-derived only)	40%	80.0%	71%
Number of persons per LLIN distributed in areas targeted for distribution (Routine programmatic monitoring)	1.25	1.25	1.25
Number of long-lasting insecticidal nets distributed to at-risk populations through mass campaigns		59,090	54,607
Proportion of targeted population covered with long-lasting insecticidal nets through mass distribution (at a ratio of 1 net per 1.25 individuals)		90.0%	75%
Number of long-lasting insecticidal nets distributed to targeted risk groups through continuous distribution		11,775	8,375

Long Lasting Insecticidal Nets (LLINs)

The Program continues to provide LLINs through mass distribution campaigns to maintain high levels of coverage and promote prevention efforts in targeted populations. The targeted number of bed nets planned for distribution in 2023 according to the 3 years replacement cycle was estimated to be 59,907. Based on that, the Program managed to distribute a total of 52,907 LLIN during mass distributions, and 8,379 LLINs as part of continuous distributions to Schools, Pregnant women, and disaster response and outbreaks. The mass distribution covers 13 health zones in Vanuatu.

As per the M&E framework for 2021-2026, the mass house-to-house distributions were accompanied by monitoring to ensure all operational and logistics components were well managed, and that the high LLIN coverage rate could be consistently maintained.

Historically, it has been a challenge for the Program to ensure that the planned health zones are thoroughly covered, and concurrently also to ensure that other damaged LLINs (such as due to Tropical Cyclone) are replaced with no exceptions. Unexpected disasters and outbreaks in the country continue to create challenges in ensuring universal coverage. Geographical isolations and terrains, and high logistical finances also challenged the program during mass distributions. Despite this, the activities have been well conducted and managed and challenges proved a learning experience for the Program to apply in the future.

Table 8. Sum of LLINs distributed in Provinces in 2023 through mass distributions.

Province	Health Zone Covered	Household covered	Population covered	Small nets given	Medium nets given	Large nets given	Total LLIN distributed
TORBA	3	1,724	7,818	0	3,296	2,188	5,484
SANMA	2,3,8	3,438	1,5131	1,011	5,662	4,581	11,254
MALAMPA	9,10,11,12	2,668	1,0181	650	4,417	2,591	7,658
PENAMA	8,9,10	7,168	29,324	2,091	11,726	8,577	22,394
SHEFA	0	0	0	0	0	0	0
TAFEA	1,2	2,275	9,900	0	4033	2,084	6,117
Vanuatu	13	17,273	72,354	3,752	29,134	20,021	52,907

Indoor residual spraying (IRS)

There were IRS activities been conducted as part of integrated outbreak response particularly in the provinces of Sama and Torba in 2023. Torba has achieved 85% of the total structured sprayed, protecting 395 households. This is part of vector control interventions in reducing the number of confirmed cases in high active foci areas in the targeted provinces. The support of this activity were through the procured spray cans and insecticides from Rotary Against Malaria (RAM) in 2020. Some of these spray cans were through the Vanuatu Australia Health Support Program (VAHP) during dengue outbreak in 2021.

Entomology

Periodic data collection is vital for decision making in vector control strategies, and also provides information on the actual or expected impact of interventions on malaria transmission. The aim of conducting vector surveillance and monitoring is to correlate and provide evidence especially in active foci areas, and for decision-making purposes.

Entomological activities have also been initially supported in 2023 through the PacMOSSI initiative program in the Pacific regions. The purpose of this is to control Dengue and other vector borne diseases in the Pacific Island countries including Vanuatu. Assessment of the breeding sites were conducted in selected active foci areas in Malampa, Sanma, and Torba

in 2023. The results of the identifications were shared through community advocacy to inform community actions as part of vector control.

5.2 Intervention 2: Case-based surveillance



Malaria case-based surveillance for elimination aims to detect and notify all malaria infections, ensuring that they are given prompt, efficacious treatment to prevent secondary cases.

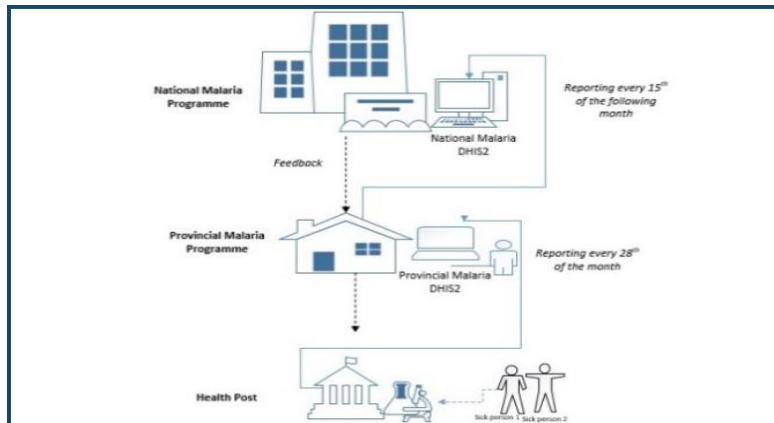
Table 9. Outcome and progress indicators, targets and 2023 progress.

INDICATORS	2023 TARGET	2023 SITUATION
Completeness of facility reporting: Percentage of expected facility monthly reports (for the reporting period) that are actually received	90%	63%
Percentage of cases notified to provincial officers within 24 hours of confirmation (Elimination settings)	100%	75%
Percentage of confirmed cases investigated, classified and managed as per national protocol within 7-days of notification (Elimination settings)	95%	65%
Percentage of confirmed cases fully investigated and classified	90%	65%
Percentage of malaria foci fully investigated, classified and managed as within 60 days (Elimination settings) per national protocol (Elimination settings)	95%	88%

A refresher DHIS-2 training using tracker was conducted in 2023 with all the Malaria Information Officers (MIS) in the provinces. The purpose was to refresh and also to inform on additional fields on case-based surveillance as part of improvements in information management. All training participants were issued with recognition certificates at the end of the DHIS-2 training workshops.

The monthly malaria line list (MMLL) reporting has been collected or sent by health workers from health facilities to provincial malaria office where the data is entered to MIS system called DHIS2 data base (Figure 4). MMLL is a paper-based reporting, kept and filed in the provincial malaria offices. Once the data entry is completed the soft copy of data can be accessed by national staff. DHIS2 is a webpage database that can only use by connecting online. All data is verified at every level of the reporting chain, both manually and through in-built checks in the MIS DHIS2 software. Data entry is also continuing to check against paper records during on-site supervisory visits. Reports are also checked at every level of the reporting chain to ensure accuracy and completeness. Necessary clarifications are sought and corrections are made as required, within the timeframes set out for reporting.

Figure 4: Reporting structure from Health Facility to National Malaria Program



Malaria response measures require every case of malaria to be notified to the Provincial Malaria Office within 24 hours of diagnosis, a case investigation to be completed within 7 days of notification in order to a) determine whether an infection was acquired locally and b) whether ongoing local malaria transmission is occurring or if not imported.

A case investigation consists of: 1) Completing the Case Investigation form for the index case, 2) Reviewing epidemiological data from previous cases in the same locality, 3) Conducting case detection / contact screening of households within 200 meters radius of the index case, 4) Conducting vector control observations in LLIN access and usage, including identification of potential vector breeding sites, 5) Case classification (local or imported), and 6) Foci identification.

The proportion of malaria cases fully investigated and classified in 2023 was 41%. Several challenges in surveillance and timely response were due to Nurses having limited access to communication networks and credits as some areas have limited network access and availability of credits in the rural remote areas. Access to and delay of funds to provinces also challenged the program to respond within 7 days as per the surveillance and response guidelines. Logistic support in remote areas, geographical isolations in hard-to-reach populations, unpredicted weather situations in the country also challenged the program to conduct timely response to cases.

5.3 Annual blood examination rate (ABER)

The Malaria Program continues to aim to achieve 100% testing of all suspected malaria cases by Rapid Diagnostic Tests (RDTs) at all levels of service delivery or microscopy at hospitals. All those with fever-like symptoms are advised to seek parasitological blood tests at their nearest health care facility to confirm whether they have malaria or not.

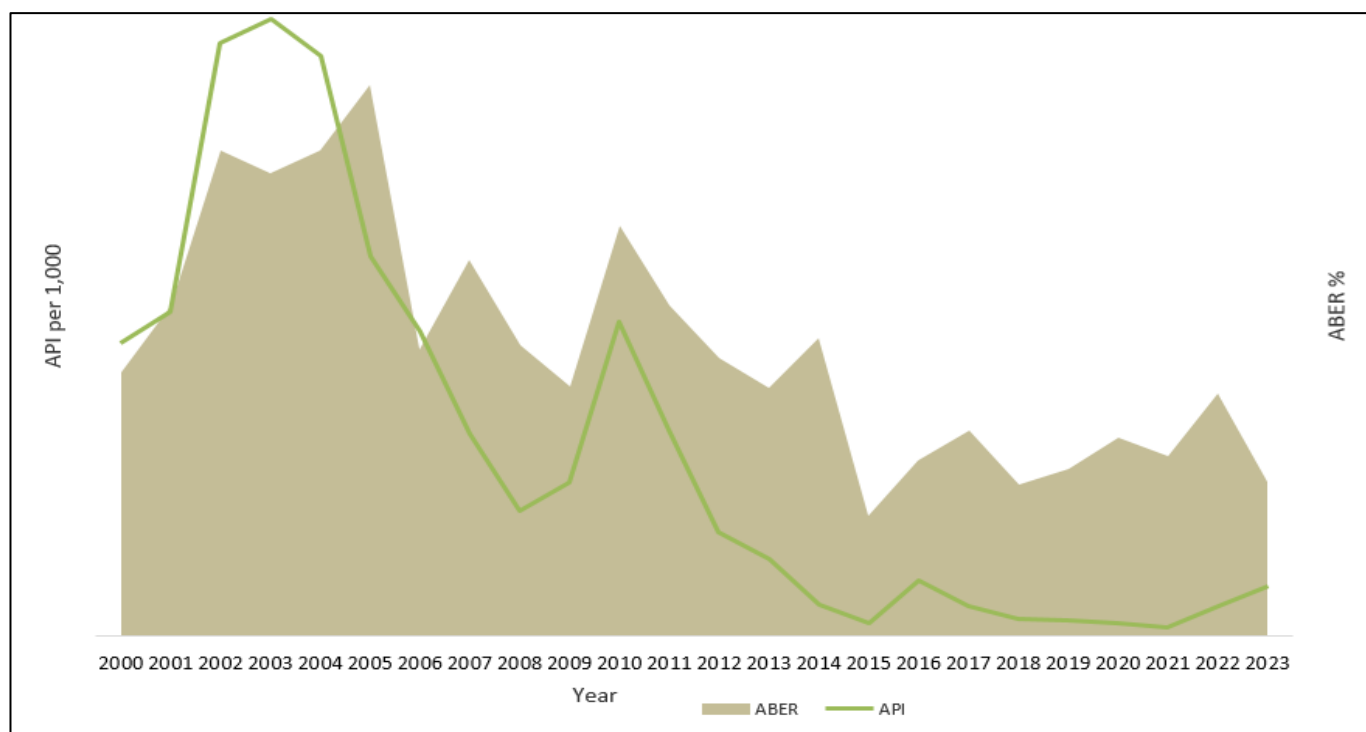
Annual blood examination rate (ABER) monitors the percentage of suspected malaria cases that are examined with a parasite-based test, and can indicate if increases or decreases in incidence may be attributed to changes in testing frequency. The testing rate can fluctuate over time depending on the number of suspected cases undergoing parasitological tests. Additionally, part of program policy was to test all fever cases who are presenting at a health facility. To discern decreases in malaria incidence, the annual blood examination rate should ideally remain constant or be continuously increased, however this depends on the seasonality

of flu-like illnesses of and the causes of fever. In addition, as the number of cases reduces, the number of fever cases seen at health facilities will also decrease.

ABER was above 10% between 2002 and 2007, but dropped below this between 2007 and 2015. It increased again in 2017 to 9.3% but subsequently decreased further down to 7.6% in 2019 and up to 9.0% in 2020 (Figure 5). This increase may have been due to more patients' having flu like illness and suspected malaria cases undertaking a parasitological test, either using microscopy or RDTs.

As per the Monitoring and Evaluation Plan, the ABER target set for 2021-2026 is to achieve and maintain ABER at 10% annually. The number of tests conducted in 2023 was 19,800 reaching 7% as compared to 8.2% achieved in 2021. The Malaria Program, through Vanuatu Ministry of Health, continuously addresses such challenges at all levels of service delivery, and with community, stakeholders, and with partners support it will aim to improve further in 2023. Stock out issues at some lower peripheries and delay in supply to most health facilities has challenged the program in reaching the annual targets. Some of the other challenging factors such as difficult geographical terrain, limited access to logistic support, and lack of test-seeking behavior have also contributed in low testing rate at different health facility level. Case Management trainings and other support workshops with Health Workers continue to identify some supportive and improvement areas in the supply chains and advocacy on importance of test-seeking behavior to inform the status of transmissions in the communities.

Figure 5. Annual blood examination rate (ABER%) and Annual Parasite Incidence (API), for 2000-2023.



5.4 Reporting coverage

Reporting coverage is an important metric as it can further support assessments to determine if decreases in case numbers are true or may be due to under-reporting. Coverage has changed over time based on health systems disruptions, constraints and opportunities. Between 2016 and 2020, reporting coverage ranged from 71 to 76%. In 2022, the overall reporting rate slightly decreased to 64%, and further to 62% in 2023. Three provinces of Malampa, Sanma, and Shefa has achieved over 70% of their reporting coverage. Penama and Tafea are just 43%, while Torba is just above 50% reporting coverage.

The reporting coverage in 2023 is below the expected target due to similar challenges previously mentioned in this annual report. Other contributing factors were due to open-closed facilities such as community Aid posts, vacant positions in some of the health facilities, damaged health facilities due to tropical cyclones, and logistic support including missing reports during deliveries at Provincial health office.

Such challenges were discussed in 2023 annual meeting and forward resolutions on how to improve in reporting coverages were respectively identified by each Provinces. It is planned that the Program will continue to address the issues on reporting coverage through continuous supervisory visits, health zone meetings, and surveillance training in 2024, with inclusion of all facilities in some initiatives and additional targeted initiatives to selected health facilities. Provincial support through partnerships and networking with NGOs is also an opportunity in collecting timely and monthly reports from the health facilities. Monitoring tools and specific resources are to be provided to help strengthen and improve information recording and management at all levels of health facilities.

Table 10. Reports received versus expected number and rates achieved in 2023.

Province	Total Health Facility	Annual Expected reports, 2023	Annual Actual reports	Annual Reporting rate %
Malampa	56	672	517	77%
Penama	48	576	248	43%
Sanma	65	780	546	70%
Shefa	69	828	629	76%
Tafea	50	600	258	43%
Torba	30	360	184	51%
Vanuatu	318	3,816	2,382	62%

5.5 Case investigations in 2023

The total number of case investigations conducted for confirmed cases in 2023 was 844, achieving only 42%. Shefa managed to investigate 92% of all its confirmed cases, followed with Malampa reaching 68%. Torba seems to face challenges with reaching 33% due to limited Staffs, travelling challenges due to weather, and timely access to funds for immediate case investigations and response. Sanma has only achieved 43% of case investigations due to resource constrains, large geographical and isolated areas in the high lands, and hard to reach sporadic cases. Poor road and weather conditions, busy farming systems in the rural areas, limited access to communication networks are some of the limitations during case investigation interventions in the endemic areas in the provinces.

These case investigations were conducted in all six provinces of Vanuatu, the majority were in all transmission areas from higher to low in the provinces of Sanma, Torba, Malampa, Shefa and Penama. Penama had maintained zero (0) cases until some importation of cases from Sanma in 2023. Completion of case investigations were supported by the stationing of Provincial surveillance staff in these provinces who primarily are responsible for case investigations. There are also Australian Volunteers Initiatives (AVI) who act as Malaria Support Elimination Officer in the provinces of Sanma, Penama, and Malampa.

Table 11. Total case investigations, by province in 2023.

Province	Total number of cases	Total number of case investigations conducted	Number classified as local case	Number classified as imported case
Malampa	72	49	41	8
Penama	60	33	23	10
Sanma	1153	499	498	1
Shefa	42	39	41	1
Tafea	1	1	0	1
Torba	667	223	667	0
Vanuatu	1995	844	1,270	21

5.6 Foci investigations in 2023

The total number of foci investigations conducted in 2023 is 15, representing 88% of the total foci investigated. This was less than the 26 foci identified in 2019, 18 foci identified in 2020. Five (5) Provinces with minimal foci have achieved 100% foci investigations. Only 0.6% of the tested population were positive during Active Case Detection (ACD), an indication of minimal transmissions in the foci areas.

Table 12. Total foci investigations, by province in 2023.

Province	*Total Foci	*Foci Investigation	Total Tested (pop)	Total Positive
Malampa	2	2	852	2
Penama	3	3	300	4
Sanma	8	6	1,904	19

Shefa	1	1	627	3
Torba	3	3	2,385	9
Vanuatu	17	15	6,068	37

Planning for a full shift from Health Zones to villages as foci was planned to occur in 2022, and with the DHIS-2 tracker training in 2023, the foci is right through village level. However, the program will set some thresholds to define foci at village levels in 2024.

5.7 DHIS2 training

The Malaria Information Management system has changed over time. DHIS2 was introduced and adopted around October 2016 to replace the Microsoft Access database. DHIS2 is a web base database and very reliable, and can be of use in remote areas if there is access to internet and a computer, laptop or tablet.

Routine malaria data are collected through hard copies of monthly malaria line lists (MMLLs) from each Health Facility, with data then entered in the web database. National level staff have access to the database and dashboards to monitor and evaluate the progress and individual performance of health facilities against standard indicators.

After the 3 years since 2020 another DHIS-2 refresher training workshops was conducted with support from Health Information System TA in 2023 with all Malaria Information System (MIS) officers in all Provinces. The purpose of the training was to scale up the tracker to other provinces in Torba, Penama, Shefa, and Tafea. This is to ensure all confirmed cases are clearly identified and classified using tracker and how it can be monitored over time. Additionally, DHIS-2 information systems have been upgraded with other additional fields of anti-malarial treatments, data disaggregation to village level, and case investigations entries. The participants also refreshed on generating standard reports as a form of providing feedbacks to their superiors and Health Workers in the provinces.

5.8 Intervention 3: Early and effective malaria case management



Providing universal and timely malaria case management is a key component of malaria control and elimination strategies.

Table 13. Outcome and progress indicators, targets and 2023 progress.	2023 TARGET	2023 SITUATION
INDICATORS		
Proportion of suspected malaria cases (fevers) that received a parasitological test at public sector health facilities	80%	
Proportion of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities as per national protocol	100%	100%

Annual blood examination rate: per 100 population per year (Elimination settings)	10%	7%
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Case management

It is essential that the Program continue to maintain case management standards in terms of ensuring prompt and effective treatment according to national malaria treatment guideline.

The strategy has a strong emphasis on maintaining and boosting quality of clinical care through targeted and corrective supervision of health workers (clinical staff) by provincial hospital staff for Health Centre nurse practitioners, and then cascading through Dispensaries to Aid Posts. Clinical pre-service and in-service trainings is to be adapted according to the health facility type. Supervision and trainings (new or refresher) are to be continuously conducted to improve and strengthen malaria case management and other diseases.

Monitoring indicators measure the number of confirmed malaria cases that are appropriately treated as per the national treatment guideline, such as non-severe cases treated with Coartem and for *P. vivax* cases, also with Primaquine. Sanma and Malampa achieved two third of the population treated with Coartem, while Shefa and Torba achieved three quarter of the patients receiving Coartem, while Tafea continue to maintain 100% Coartem treatment. Few challenges in maintaining is air flight issues and delays in supporting the central pharmacy "push system" to the health facilities, delay of stock orders and transportations of supplies to all or most of the health facilities in the rural peripheries. Damaged stock at health facilities due to twin Tropical cyclones in early 2023.

Table 14. Confirmed malaria cases appropriately treated as per the national treatment guideline in 2023.

Province	Microscopy + RDT - All Positive Malaria Cases	% Confirm and treated with Coartem
Malampa	72	47
Penama	60	39
Sanma	1153	781
Shefa	42	33
Tafea	1	1
Torba	667	499
Vanuatu	1,995	1,400

The number of prescriptions for Primaquine as a radical treatment for *P. vivax* infections and *P. falciparum* as recorded in the MMLs and case investigation from all health facilities was 1,400 treated patients. This means that 70% achievement of the confirmed cases received primaquine treatment, as compared to only 21% receiving primaquine treatment in 2022. Shefa and Torba achieved over three quarter of the target, whilst two third is achieved in Penama and Sanma province.

Such cases are registered and treated with primaquine in hospitals, health centers, and dispensaries only as outlined in the *Malaria Diagnosis and Treatment Guidelines*. This shows that the number of cases is higher than number of patients prescribed primaquine because most of the cases were detected at lower facility level such as aid post. This indicates that the referral system may 'lose' some patients, and hence that correct issuance of Primaquine is not as high as expected. The program is trying its best to also trained some of the targeted nurses at Aid posts level to prescribe primaquine, with support from using G6PD testing devices, and under close supervision from the Zone Nurse. Furthermore, the number of G6PD testing devices are limited and access only in hospitals, health centers, and few dispensaries. Plans to procure further in 2024 to scale up testing rate and appropriate primaquine treatment to patients.

Geographical isolation, high logistical costs, and at times delays in the supply chain for malaria commodities hinders patient access to appropriate and complete treatment as per the national treatment guideline. Further work will be conducted in 2024 to ensure that all patients diagnosed as positive for malaria receive appropriate and timely treatment.

Table 15. G6PD testing and Primaquine treatment.

Province	Confirmed Malaria Cases	Number of G6PD tested	# Patients treated with Primaquine Treatment
Malampa	72	0	47
Penama	60	0	39
Sanma	1153	10	781
Shefa	42	42	33
Torba	667	54	499
Tafea	1	0	1
Vanuatu	1,995	106	1,400

The proportion of cases tested by RDT or microscopy through active case detection (ACD) and passive case detection (PCD) increase from 19,561 in 2022 to 21,247 tests in 2023. This increase is due to more suspected fever cases reported at reporting health facilities as part of community support toward elimination. Again, although over 6,000 tests conducted using ACD only less than 50 have been detected as positives. This may be due to some as carriers and still asymptomatic, or those appropriately responded during case investigation and have complete treatment to clear the parasites in their blood.

Table 16. Number of total PCD tested and total ACD tested with positive cases in 2023.

Period	Province	Total PCD Test	Total PCD Positive	Total ACD Test	Total ACD Positive	Total PCD + ACD Test	Total PCD + ACD Positive
2023	Malampa	3,366	70	852	2	4,218	72
	Penama	1,665	50	-	10	1665	60
	Sanma	6,747	1,134	1,904	19	8,651	1,153
	Shefa	943	39	627	3	1,570	42

	Tafea	253	1	37	0	290	1
	Torba	2,445	658	961	9	3,406	667
Total		15,419	1,504	4,381	43	19,800	1,995

Case management training

The availability of effective and safe malaria treatments at every level of the health care system (hospitals, health facilities and aide posts) is vital to preventing deaths and further infections. As specified in the *Guidelines for Treatment of Malaria in Vanuatu*, artemisinin-based combination anti-malarials are the main treatment.

Primaquine remains essential for the complete eradication of *P. vivax*, although due to concerns of G6PD deficiency in the population the *Guidelines for Diagnosis and Treatment of Malaria in Vanuatu* only prescribe its use through health centers, dispensaries and hospitals. From 2015 onwards, malaria treatments have been procured and distributed through the standard MOH medical products supply system.

Under the NMSP, the role of the program is to maintain and improve the quality of clinical care by facilitating training and supervision for clinical staff. The NMSP contemplates that training and supervisions for malaria treatment will be delivered according to a cascade model: delivered by provincial hospital staff to health centre nurses, who will in turn deliver to dispensaries, and so on to aide posts. Hospital doctors are to be specifically updated on the current guidelines for managing severe and complicated cases of malaria.

The Case Management refresher training conducted in 2023 were 5 in total, with each training in Malampa, Sanma, Tafea, and in Shefa. Additionally, there were spot refresher trainings conducted at selected health facilities in some of the Provinces by the Provincial health during supervisory visits. Sixty seven (67) participants were trained for the sessions. All refresher trainings addressed G6PD testing procedures, primaquine treatment guidelines, and the importance of treatment compliance. Surveillance, M&E feedback, and way forward improvements were also packaged into the training module.

According to plan, further Case Management refresher training should have continued to be conducted in these Provinces of Sanma, Penama, Shefa, and Malampa, however could not happen due to some clinical involvement of Nurses, weather issues in some provinces, involvement of Staffs during twin TC response in early 2023, and flight issues at the last 2 quarters in 2023. Engagement of Provincial Nurses in other health priorities also limits the number of case management and M&E trainings.

Table 17. Number of health workers who attended case management trainings in 2023.

Province	No of trainings	No Health Staff trained
Malampa	1	15
Penama	1	12
Sanma	1	14
Tafea	1	13
Shefa	1	13
Vanuatu	5	67

5.9 Intervention 4: Health promotion and community engagement



Advocacy, strategic communication and social mobilization efforts are essential to support malaria elimination initiatives.

Health promotion and community engagement activities accompanied emergency response, screening and treatment, indoor residual spraying, and bed net distributions in 2023. An Advocacy, Communication and Community Mobilization plan developed through a consultant will begin to implement in 2024. The communication plan focuses on three main pillars such as on; 1) Advocacy, 2) Social Mobilization, 3) Behavior Change Communication (BCC). Nonetheless, the National and Provincial teams continue to advocate on three key messages: 1) Sleep under treated nets every night, 2) Go to a nearest health facility for blood test if experiencing fever, 3) If you have malaria, ensure to complete all your prescribe malaria treatments. Additionally, posters and brochures were developed on LLIN use, testing every fever, blood tests, and treatments. These IEC materials were used in the provinces during field interventions and post disasters responses in the affected provinces. Support from UNDP was on malaria radio talk back shows sessions, radio spots, and TV. The funding support from other development partners (including UNDP) such as Rotary Against Malaria (RAM) supports the program in the printing of 800 T-shirts for the advocacy during Sanma day (24th September annually) and Malampa Day (10th October annually). Malaria elimination key messages were printed with logos from partners support. This has motivated the malaria teams in the provinces to excel in communication networking with key stakeholders and community leaders, including youth and women. Plans are under way in 2024 to do similar and disseminate through Provincial Government representatives (Area Administrator and Secretaries) within respective active foci areas.

5.10 Intervention 5: Disaster relief preparedness and response



Disasters can potentially increase vector densities and person-vector contact with increased risk to individuals of infection and outbreaks of malaria or other vector-borne diseases.

Vanuatu was regarded as a natural disaster prone country, and the nation has annually experience this particularly for tropical cyclones and earthquakes. Moreover, these has

potentially develop threat on vector borne diseases. Even high humidity and unexpected rainfalls creates favorable breeding conditions for the *Anopheles* and *Aedes* mosquitoes.

Ministry of health has consolidated disaster preparedness and response plan and simple health key messages on vector borne, food borne, and water borne diseases, including mother and child care. Malaria disaster and response plan has been part of this consolidated disaster preparedness and response plan as all health officers usually involve during natural disasters.

Furthermore, in supporting this plan are the provincial based Provincial Health Emergency Operation Center (PHEOC) that liaise directly with National Health Emergency Operation Center (NHEOC) during natural disasters.

Program management

Table 20. Outcome and progress indicators, targets and 2023 progress.

INDICATORS	2023 TARGET	2023 SITUATION
Percentage of health facilities receiving supervisory visits during the reporting period (at least once every 6 months)	95%	63%
Malaria is a notifiable disease	Yes	Yes
The national malaria elimination plan has been approved and endorsed by the Ministry of Health	Yes	Yes

The Program has met some of the management outcome indicators within the NMSP framework, despite the twin category 4&5 cyclones in early 2023. The involvement of Programme staff from national and provincial levels preparedness and response hindered some of the achievements. For instance, nurses who are essential for malaria diagnosis and case management had to play a major role in advocacy and response during 2023 for all integrated diseases during post disasters.

One of the major achievements in the program management in 2023 was the mid-term review of the National Malaria Elimination Strategic Plan (NMESP 2021-2026). The review was supported through partners support. There were adjustments and recommendations in the review due to increase in the number of cases in the country. As such, timelines for elimination in the endemic provinces were reviewed and adjusted accordingly. This was communicated during the Annual Malaria Meeting in Santo, Sanma Province on how to improve and progress towards the elimination road map for active foci areas. The priority plans and interventions that they will respectively implement in 2024 onwards active foci management plans were discussed and presented after the group work session.

Furthermore, was the development of the new grant proposal (2024-2026) with a hired consultant supported through partners. This include country dialogue with stakeholders,

technical partners, Health Director General and Public Health Director, and in-country PIRCCM representative.

The following was also developed with the support of UNDP:

- Draft Malaria Advocacy, Communication and Community Mobilization Strategy

This communication strategy will supplement the Health promotion communication plans and activities in the provinces in 2024. A training workshops is to be conducted with NGOs, community stakeholders and leaders, and provincial health promotion officers on the dissemination of this strategy to lower peripheries.

The Annual Review and Planning meetings was held from 4th – 8th December 2023. The participants included the Director of Public Health, Acting Director of Corporate and Planning Services, Coordinator of the National Malaria and Other Vector Borne Diseases Control Program, Provincial Health Managers from Malampa, Penama, Sanma, Shefa and Torba, and Malaria Provincial Supervisors from Malampa, Penama (acting), Shefa, Sanma (acting), Tafea, and Torba, and other national and provincial staff. Some of the way forward recommendations were; 1) Establishment of Malaria Elimination Officers and Malaria Elimination Committee in active foci areas with support from Provincial health Management, 2) All program vacant positions (National/provincial) to be filled in 2024, 3) Improve communication at all levels, 4) Improve the feedback cycle, to ensure that information from M&E activities inform ongoing programmatic activities and response, 5) Provincial malaria supervisors with PHM to plan and budget using malaria work plan and provincial business plan.

Table 21. Overall summary of planned versus completed activities for 2023, by technical area

Technical area	No of BP activities	No of Activities Completed
Program Management (including supervisory visits)	5	4
Vector Control (including Entomological Surveillance Activities)	3	2
Surveillance	4	3
Case Management		
Health Promotion and Community Engagement	3	2

6.1 Supervisory visits – national team to provincial team

Provincial visits were conducted as part of continuous health systems strengthening initiatives to Provincial Management and Administrations. This involved meeting with Provincial Health Managers and Administrators and discussing human resource issues and challenges, reviewed provincial work plans, discussed annual performance indicators and targets. The national visit to the provinces also to check on provincial filings particularly on surveillance information, meeting with management on vacant positions and recruitments, assets management, and other supportive areas.

6.2 Supervisory visits – provincial team to health facilities

These visits are part of system strengthening wherein check lists are provided to:

- cross-check malaria consumable stock (i.e. RDTs, G6PD tests, ACTs, Primaquine)
- verify information on Monthly Malaria Line Lists (MMLL) for all tested and confirmed cases
- provide information and feedback to the source
- provide spot trainings for selected health facilities, and
- provide or collect other valuable information as part of HSS.

In 2023, supervisory visits were conducted with support from Global Fund and integrated activities through Government recurrent funds. Some provinces planned for priority health facility visits but achievement of planned visits was lower than expected due to flight issues, staff responding during post disasters, and staffs conducting case investigations and response. Nonetheless, most of the planned visits have been conducted with great achievements (Table 22). Sanma with high number of cases were able to achieve 90% of the health facilities visited as it enables the officers to provide feedback and have updates on the disease situations. Also as a means of moral support on the good support they have provided in diagnosis and treatment, including advocacy in the supervised communities.

Table 22. Supervisory Visits Coverage from the selected zones and health facilities, 2023.

No.	Province	# of Health Zones	Health facilities		
			Planned to visit	Actually visited	Coverage (%)
1	Sanma	9	64	58	90%
2	Malampa	7	36	31	86%
3	Penama	3	8	8	100%
5	Shefa	3	32	30	93%
	Tafea	4	50	35	70%
Total		26	190	162	85%

Human resources



The Program Management has done much in ensuring most or all of the vacant positions be filled to sustain the progress gained. Although recruitment process and procedures were lengthy, the program managed to have the key positions of Malaria Supervisor filled in Sanma, Malampa, and Torba. Penama has been assigned with an acting Malaria Supervisor and expects direct recruitment after the probation period. As such, the acting officers as Supervisors were back to their usual roles. There are few field officers vacant in the provinces, however some who employed under Special Service Agreement (SSA) with support from

WHO as Surveillance will be considered to occupy the field officers positions after their contract ends. The Program Management has discussed in 2023 the possibilities for most contract positions at the National for most key positions to be included into the revised structure. Progress are under way in 2024 for a push towards occupying them into permanent positions.

The Program sought technical assistance such as through WHO and UNDP/Global Fund to tackle the workforce sector issues, including through recruitment of short-term staff on Special Service Agreements or on Temporary Contracts. A TA was supporting the program temporary for three (3) months in mid-year in 2023, and leave after that. Another possibilities is to have another for six (6) months contract since November 2023, however nothing has been seen positive.

7.1 National level staffing

Through the course of 2023, there were newly recruited Provincial Malaria Supervisors for Torba, Sanma, and Malampa. That of Penama is on six-month probation and should be automatically recruited if qualified, although he was a long time serving program serving at the national and in the provinces. A permanent position for Entomology Officer was successfully recruited beginning 2024, after being in the contract as the Laboratory technician previously. A graduate intent is currently supporting the national on information management with DHIS-2, and assisting program M&E focal.

Through the Vanuatu and Australia partnerships, there were three (4) Australian Volunteers being recruited under for 2 years to support malaria elimination priorities in the provinces. Each is performing tasks as Provincial Malaria Elimination support officer, stationed in Sanma, Penama, Malampa, and National.

Table 1. Staffing for National Malaria Program in 2022

(P = Permanent, C = Contract, T = Temporary; D = Daily Rated; EL = Extended leave)

Name	Position Title	Status of employment	Position Funder
Wesley Donald	Coordinator	P	Vanuatu government
Andrew Tavi	Case Management Officer	C	Development Partner (WHO)

Guy Emile	Vector Control Officer	P	Vanuatu government
Johnny Nausien	Monitoring and Evaluation Officer	P (EL)	Vanuatu government
Sizai Guy	National Surveillance Officer	C	Vanuatu graduate Intent support
Christie Makikon	Vector Laboratory Technician	C	Development Partner (UNDP/GF)
Frederick Yakaula	Entomologist	P	Vanuatu government
Mark Babu	Field Officer	P	Vanuatu government
Timothy Takau	Procurement and Supply Chain Officer	C	Development Partner (UNDP/GF)
Peter Lenis	National Reference Laboratory Officer	P (Transferred Oct 2022)	Vanuatu government Vacant
John Sanga	Community Mobilization Officer	Vacant	Development Partner (UNDP/GF)

7.2 Provincial level staffing

Table 24. Staffing in the provincial malaria offices in 2022

<i>Name</i>	<i>Position Title</i>	<i>Status of employment</i>	<i>Position Funder</i>
Tafea Province			
Harry Iata	Supervisor	P	Vanuatu government
James Amon	Provincial Malaria Information Officer	P	Vanuatu government
	Surveillance Officer	Vacant	Vanuatu government
Naies Kopin	Microscopist	P	Vanuatu government
Shefa Province			
Kalo Kalkoa	Malaria Supervisor	P	Vanuatu government
Aida Simon	Provincial Malaria Information Officer	P	Vanuatu government
Amos Tabi	Microscopist	P	Vanuatu government
Sylver Lowac	Field Officer	P	Vanuatu government
Malampa Province			
Jovit Siaban	Malaria Supervisor	P	Vanuatu government
Atty Jeffery	Provincial Malaria Information Officer	P	Vanuatu government
Augustino patick	Surveillance / Field Officer	P	Vanuatu government
Kilion Nempekrow	Microscopist	P	Vanuatu government

Sanma Province			
Andrew Tavi	Malaria Supervisor	P (Recently occupied)	Vanuatu government
Roger Jimmy	Provincial Malaria Information Officer	P	Vanuatu government
Thomas Taribego	Surveillance / Field Officer	P	Vanuatu government
Freddy Moses	Microscopist	P	Recurrent
Penama Province			
Jimmy Makambo	Acting Malaria Supervisor	Vacant	Vanuatu government
Douglas Garae	Provincial Malaria Information Officer	P	Vanuatu government
	Microscopist	Vacant	Vanuatu government
Godfrey Tari	Surveillance / Field Officer	C	Development Partner (WHO)
Torba Province			
Peter Lenis	Malaria Supervisor	P (Started Oct 2022)	Vanuatu government
Nick Mol	Surveillance / Field Officer	C	Development Partner (WHO)
Haward Lonsdale	Microscopist	P	Vanuatu government
Christina Wormal	Provincial Malaria Information Officer	C	Vacant

7.3 Technical assistance

The technical support in 2023 was on ad hoc basis. A WHO TA for malaria supports the program for three (3) months in mid-year, and another yet to come and continue for another six (6) months support.

Other short-term contract TA support were on grant development proposal and mid-term review exercise 2023.

Financing



The annual malaria program operational budget is based on the annual program 'Business Plans'. These plans were devised generated for the two levels of program implementation, the national level and the provincial level. Each of these business plans is focused on the core activities that fall within the functions and role delineation of that level:

1. National level focuses on supervision, planning, monitoring, evaluating and supporting provincial service delivery;
2. Provincial level focuses on implementation and service delivery for community-based activities, and training and support for malaria diagnostics and case management for staff at the health facilities.

The budgeted amount for staffing funded either through domestic "recurrent" funds or from development partner contributions is not included in this budget. What is mentioned below focuses on operational activities. Funding allocated for malaria diagnostics or drugs is also not covered in this action plan as this budget area is managed through the Central Medical Stores (CMS). Other procurement of LLINs, malaria consumables, assets, IT equipments, and furniture is covered under the UNDP malaria grant for procurement.

The total malaria grant supported under UNDP for 2023 \$250,412. In addition to that is C-19RM grant which is \$178,333.38. This supports the program in operations, procurements, and human resource support. There are other partners support such as Rotary Against Malaria (RAM), WHO through DFC funds, DFAT through Vanuatu Australia health Program (VAHP), and the Government recurrent funds that supports mostly human resource salaries.

The Vanuatu Government recurrent budget for malaria was allocated mainly to diagnosis and case management, and program management. Global Fund has historically supported mainly vector control along with diagnosis and case management, and this support continued in 2022. In 2022, Rotarians Against Malaria continued support across all thematic areas. WHO support was mainly to program management, vector control and case management in order to fill funding gaps for essential activities, and also assisted in emergency procurement of Primaquine to fill a gap.

Major challenges

The major challenges facing implementation in 2023 were as follows:

- Disruption to activities due to twin Tropical Cyclone Kevin and Judy and post disaster response.
- Continuous reductions in recurrent annual budget despite requirements for Malaria elimination
- Late disbursement of operational funds
- Lack of sustainable capacity building and staff retention at all levels of service delivery
- Lack of logistics and financial support in the provinces to enable Malaria surveillance activities, such as case investigation and response

- Limited communication access in remote areas for conducting case investigations
- Unpredicted weather situations that obstructs operational activities, and creating new vector breeding sites.
- Geographical isolations in the high lands and mountainous terrains in some provinces

Future priorities

The following were identified by attendees at the Malaria Annual Review and Planning Meeting as priority actions for 2024 and beyond to address the challenges that faced the Program in 2023:

- Increase availability of malaria commodities at health facilities, especially Primaquine, RDTs and ACTs
- Improve surveillance to ensure timely reporting of cases and a clear picture of disease burden across the country
- Strengthen case management, including training of health facility staff to rapidly recognize, test and treat malaria, and to ensure microscopy capacity for validation of RDT accuracy
- Continue case investigations that include screening by RDT around confirmed cases
- Continue distribution of long-lasting insecticidal net distribution campaigns, and supplement with top-ups in active foci
- Conduct targetted indoor residual spraying in active foci, prioritizing those with high numbers of cases
- Enhance community education and mobilization to ensure awareness of malaria
- Improve advocacy and stakeholder engagement to ensure participation of communities in anti-malaria activities
- Establish community Malaria Elimination Committee and Elimination officers in active foci areas
- Strategically focus in high active foci areas with more intensified control measures
- Engage Provincial Government, Provincial TAG, NGOs, Provincial Health Emergency operation Centers (PHEOC), and National Emergency Operation Centers during outbreaks.
- Engage community leaders with trainings on the management of active foci areas.
- Work with Ministry of finance on decentralization of funds for immediate access for routine activities and response.

A set of recommendations were raised during the Annual Malaria Meeting in December 2023, and the office of the Directorate of Public Health will present to Ministry of Health Executive Committee in 2024.

Conclusions

Building on past and recent successes and achievements, the Malaria Program remains committed to the vision of a malaria-free Vanuatu contributing to the health and well-being of the population. This is clearly articulated and set out in the new *National Strategic Plan for National Malaria Elimination (2021–2026)*.

Despite the shift on the elimination road map the Ministry of Health will Continue to provide high-quality support to enable health services at all levels of the health system. Cooperation and coordination with development partners will be further strengthened for the betterment of the services endorsed by Government of Vanuatu. It is anticipated that concerted work will continue to reap the benefits of decreased malaria burden in Vanuatu, towards national malaria elimination and WHO certification of malaria-free status in the near future.

Annexes

Annex 1. Malaria indicator matrix from Monitoring and Evaluation Plan

INDICATORS	Base-line	Base-line year	2021	2022	2023	2024	2025	2026
IMPACT								
Confirmed malaria cases (microscopy or RDT)*	576	2019	≤ 280	≤ 140	≤ 56	≤ 56	0	0
Annual parasite incidence: Confirmed malaria cases (microscopy or RDT): rate per 1000 persons per year (Elimination settings)	1.9	2019	0.91	0.44	0.17	≤ 0.1	≤ 0.1	≤ 0.1
Number of provinces with zero locally transmitted cases of malaria	1	2019	3	4	6	6	6	6
Inpatient malaria deaths per year: rate per 100,000 persons per year	0	2019	0	0	0	0	0	0
Malaria test positivity rate	2.4%	2019	≤ 1.25	≤ 1	≤ 1	0	0	0
Number of active foci of malaria (Elimination settings)	26	2019	36	18	8	0	0	0
Number of people and percentage of population living in active foci (Elimination settings)	TBC	TBC	TBC	TBC	TBC	TBC	0	0
OUTCOME								
Proportion of population that slept under an insecticide-treated net the previous night (Survey-derived only)	44.3%	2013	80.0%	80.0%	80.0%	TBC	TBC	TBC
Proportion of children under five years old who slept under an insecticide treated net the previous night (Survey-derived only)	51.0%	2013	90.0%			TBC	TBC	TBC
Proportion of pregnant women who slept under an insecticide-treated	40.5%	2013	90.0%	90.0%	90.0%	TBC	TBC	TBC

net the previous night (Survey-derived only)								
Proportion of population using an insecticide-treated net among those with access to an insecticide-treated net	68,4%	2020	60.0%	70.0%	80.0%	TBC	TBC	TBC
Proportion of population with access to an ITN within their household (Survey-derived only)	83.0%	2013	95.0%			TBC	TBC	TBC
Number of persons per LLIN distributed in areas targeted for distribution (Routine programmatic monitoring)	1.35	2019	1.25	1.25	1.25	1.25	1.25	1.25
Annual blood examination rate: per 100 population per year (Elimination settings)	7.6%	2019	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Proportion of children under five years old with fever in the last two weeks for whom advice or treatment was sought (Survey-derived only)	57.0%	2013	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Proportion of women who can recall the message: "Sleeping under a bed net prevents malaria" (Survey-derived only)			95.0%				TBC	TBC
Proportion of women who can recall the message: "Seek care within 24 hours of onset of fever" (Survey-derived only)			95.0%				TBC	TBC
Proportion of women who can recall an adapted, elimination-focused message (TBC; survey-derived only)			95.0%				TBC	TBC
OUTPUT or COVERAGE								
Number of long-lasting insecticidal nets distributed to at-risk populations through mass campaigns	80,623	2019	27,385	46,378	107,116	TBC	TBC	TBC

Proportion of targeted population covered with long-lasting insecticidal nets through mass distribution (at a ratio of 1 net per 1.25 individuals)	99.0%	2019	99.0%	99.0%	99.0%	TBC	TBC	TBC
Number of long-lasting insecticidal nets distributed to targeted risk groups through continuous distribution		TBC	1,000	4,000	4,719	TBC	TBC	TBC
Proportion of suspected malaria cases (fevers) that received a parasitological test at public sector health facilities	80%	2019	80%	80%	80%	TBC	TBC	TBC
Percentage of malaria foci fully investigated and classified	100.0%	2019	100.0%	100.0%	100.0%	TBC	TBC	TBC
Proportion of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities	98.44%	2019	100%	100%	100%	TBC	TBC	TBC
Proportion of households in targeted areas that received Indoor Residual Spraying during the reporting period	95.0%	2013	90%	95%	100%	TBC	TBC	TBC
Percentage of active and residual non-active foci and percentage of population living in receptive areas covered by appropriate vector control (IRS and/or LLINs), by year (Elimination settings)			TBC	100%	100%	100%	100%	100%
Percentage of cases notified to provincial officers within 24 hours of confirmation (Elimination settings)	100%	2019	100%	100%	100%	100%	100%	100%
Percentage of confirmed cases investigated, classified and managed as per national protocol within 7-days of notification (Elimination settings)	100%	2019	90%	95%	100%	100%	100%	100%

Among cases investigated, classified and managed as per national protocol within 7-days of notification, the proportion that are followed up within 60 days (Elimination settings)			75%	90%	100%	100%	100%	100%
Percentage of malaria foci fully investigated, classified and managed as within 60 days (Elimination settings) per national protocol (Elimination settings)	100%	2019	90%	95%	100%	100%	100%	100%
Malaria and VBD disaster response plan developed in line with NDMO Custom Draft Endorsed			Draft	Endorsed		After-action review as appropriate		
Completeness of facility reporting: Percentage of expected facility monthly reports (for the reporting period) that are actually received	70.6%	2019	80%	85%	90%	90%	90%	90%
Percentage of confirmed cases fully investigated and classified	35.8%	2019	90.0%	95.0%	100.0%			
Timeliness of facility reporting: Percentage of submitted facility monthly reports (for the reporting period) that are received on time per the national guidelines	47%	2019	80%	85%	90%	90%	90%	90%
Percentage of health facilities receiving supervisory visits during the reporting period (at least once every 6 months)	24%	2019	95%	95%	95%	95%	95%	95%
Percentage of health facilities without stock-outs of ACT & Primaquine during the reporting period.	NA		90%	95%	100%	100%	100%	100%

Percentage of HFs without stock-outs of RDTs & G6PD during the reporting period.	NA		90%	95%	100%	100%	100%	100%
Percentage of health product batches for malaria tested for quality in line with Global Fund Quality Assurance policy	NA		90%	95%	100%	100%	100%	100%
QUALITY of CARE								
Proportion of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities as per national protocol	99.0%	2019	100%	100%	100%	100%	100%	100%
Percentage of microscopy results crosschecked by national reference laboratory	4.2%	2019	100%	100%	100%	100%	100%	100%
ELIMINATION-ORIENTED PROGRAMMATIC MILESTONES								
Malaria is a notifiable disease	Yes		Yes	Yes	Yes	Yes	Yes	Yes
The national malaria elimination plan has been approved and endorsed by the Ministry of Health	Yes		Yes	Yes	Yes	Yes	Yes	Yes
An independent national malaria elimination advisory committee has been set up and convenes at least quarterly	Yes		Yes	Yes	Yes	Yes	Yes	Yes
An independent comprehensive review on progress towards elimination and preparedness for certification assessment is conducted and shared with stakeholders.	Yes	2018		Yes			Yes	