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U.S. PRESIDENT'S MALARIA INITIATIVE

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This FY 2021 Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with national malaria control programs and other partners. Funding available to support outlined plans is pending final FY 2021 appropriation. Any updates will be reflected in revised postings.

U.S. PRESIDENT'S MALARIA INITIATIVE

SIERRA LEONE

Malaria Operational Plan FY 2021

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, lifesaving malaria interventions alongside catalytic technical and operational assistance to support Sierra Leone to end malaria. PMI has been a proud partner of Sierra Leone since 2017 helping to decrease child death rates by 22 percent through investments totaling almost \$60 million.

The proposed PMI fiscal year (FY) 2021 planning budget for Sierra Leone is \$14.5 million. This Malaria Operational Plan (MOP) summary outlines planned PMI activities in Sierra Leone for FY 2021. See accompanying **FY 2021 Budget Tables** (Tables 1 and 2) for activities and budget amounts, available on pmi.gov. Developed in consultation with the National Malaria Control Program (NMCP) and key stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Sierra Leone as well as other donors and partners. See **Annex A: Gap Analysis Tables** for information on commodities.

To accelerate the journey to self-reliance, PMI developed a programmatic inventory to assess the strengths and persistent challenges of the Sierra Leone program. See **Annex B: Program Inventory**. The activities proposed in this MOP are tailored to draw on strengths and foster improvements.

Since the FY 2020 MOP was developed, the following new data, updated policy and/or strategic priorities relevant for the FY 2021 MOP have become available.

- Under-five mortality rate has decreased from 156 per 1000 live births in 2013 (2013 Demographic Health Survey, DHS) to 122 deaths per 1000 live births in 2019 (2019 DHS).
- Insecticide-treated nets (ITN) access has improved when comparing data from the 2016 Malaria Indicator Survey (MIS) and the 2019 DHS:
 - An increase from 60% of households with at least one ITN to 68%;
 - An increase from 16% of households with at least one ITN for every two people to 25%;

- An increase from 44% of children under five years of age and 71% of pregnant women who slept under an ITN the previous night to 59% and 77%, respectively.
- PMI has made a significant investment with the Global Fund in the purchase of 4.6 million ITNs that contain the synergist piperonyl butoxide (PBO). PBO ITNs will be distributed in 2020 during a mass distribution campaign. These ITNs have a higher efficacy compared to traditional ITNs in the setting of increasing insecticidal resistance in Sierra Leone and should result in more effective vector control in the country. PMI will be conducting annual durability monitoring of these PBO ITNs.
- Although the 2019 DHS demonstrated improved availability and usage of ITNs in households, vector control remains a key intervention for improvement. One additional activity being proposed in the FY 2021 MOP is to conduct robust monitoring and evaluation of the effectiveness of a non-pyrethroid IRS on vector control in the setting of the nationwide PBO ITN distribution in 2020. This evaluation will assist the NMCP in targeting vector control interventions to the highest burden populations and will inform policy and decision-making for other countries in the deployment of IRS and PBO ITNs.
- Sierra Leone’s National Malaria Control Strategic Plan (2016–20) remains in place since the development of the FY 2020 MOP. However, this strategy is currently being updated and a new one (2021 -2025) will be available by the end of 2020 for implementation in 2021. Subsequently, PMI continues similar levels of funding to support Sierra Leone’s strategy in technical assistance and implementation of interventions for vector control (ITNs and indoor residual spraying [IRS]), entomological surveillance, malaria case management, malaria in pregnancy, social and behavioral change, and surveillance monitoring and evaluation, and also through the procurement of commodities.

For more information about the malaria situation, malaria control progress, and intervention-specific data in Sierra Leone, please refer to the FY 2020 MOPs available on pmi.gov.

Annex A. Gap Analysis Tables

Insecticide-treated Mosquito Net (ITN) Gap Analysis			
Calendar Year	2020	2021	2022
Total targeted population	8,282,554	8,547,596	8,821,119
Continuous Distribution Needs			
Channel #1: ANC ¹	353,499	364,811	376,485
Channel #2: EPI ²	270,343	278,994	287,921
<i>Estimated total need for continuous channels</i>	623,842	643,805	664,407
Mass Campaign Distribution Needs			
2020 mass distribution campaign(s) ³	4,601,419	0	0
<i>Estimated total need for campaigns</i>	4,601,419	0	0
Total ITN Need: Routine and Campaign	5,225,261	643,805	664,407
Partner Contributions			
ITNs carried over from previous year ⁴	635,650	546,174	0
ITNs from MOH	0	0	0
ITNs from Global Fund	2,101,419	0	0
ITNs from other donors (UNICEF)	0	0	0
ITNs planned with PMI funding ⁵	3,034,366	97,631	332,203
Total ITNs Available	5,771,435	643,805	332,203
Total ITN Surplus (Gap)	546,174	0	(332,204)

¹ 4.4% of total population are pregnant women (based on 2015 Population Census), and 97% of pregnant women receive ANC care (one or more visits) from a trained provider at a health facility where ITNs would be provided (2013 DHS).

² 4% of total population are children under 1 year of age (based on 2015 Population Census), and the estimated children accessing EPI are: 80% universal coverage + 1.6% returning defaulters.

³ Taking into consideration procurement lead time, the need for the June 2020 ITNs mass campaign will be procured with previous years' funding.

⁴ The carryover in 2020 was from the physical count done on 30th September 2019 subtracting the 4th quarter distribution quantity done in October.

⁵ The quantity in 2019 is the sum of 2,500,000 (for mass distribution campaign) and 534,366 (for routine distribution).

Sulfadoxine-Pyrimethamine (SP) Gap Analysis for Pregnant Women			
Calendar Year	2020	2021	2022
Total Population at Risk	8,282,554	8,547,596	8,821,119
SP Needs			
Total number of pregnant women ¹	364,432	376,094	388,129
Total SP Need (in treatments)	972,123	1,586,930	1,377,936
Partner Contributions			
SP carried over from previous years ²	818,357	0	0
SP from Government	0	0	0
SP from Global Fund	153,766	1,057,955	0
SP from Other Donors	0	0	0
SP planned with PMI funding	0	0	0
Total SP Available	972,123	1,057,955	0
Total SP Surplus (Gap)	0	-528,975	-1,377,936

¹ The total number of pregnant women is estimated at 4.4% of the total population.

² The carryover includes the quantity for IPTp and IPTi. The carryover in 2020 was from the physical count done on 30th September 2019 subtracting the 4th quarter distribution quantity done in October.

SP Gap Analysis for Intermittent Preventive Treatment for Infants (IPTi)			
Calendar Year	2020	2021	2022
Total population at risk	8,282,554	8,547,596	8,821,119
SP Needs			
Total number of children under 1 year of age ¹	331,302	341,904	352,845
Total SP Need (in treatments)	429,036	676,970	569,491
Partner Contributions			
SP carried over from previous years ²	0	0	0
SP from Government	0	0	0
SP from Global Fund ³	429,036	451,313	0
SP from other donors	0	0	0
SP planned with PMI funding	0	0	0
Total SP Available	429,036	451,313	0
Total SP Surplus (Gap)	0	-225,657	-569,491

¹ 4% of total population are children under 1 year old (based on 2015 Population Census) with 3.2% annual population growth.

² The SP stock for IPTi is pooled with that for IPTp. The carryover is indicated in the "SP gap analysis for pregnant women" sheet.

³ Global Fund might fill the gap pending discussion with MoHS.

Rapid Diagnostic Test (RDT) Gap Analysis			
Calendar Year	2020	2021	2022
RDT Needs			
Total country population	8,282,554	8,547,596	8,821,119
Population at risk for malaria ¹	8,282,554	8,547,596	8,821,119
PMI-targeted at-risk population	8,282,554	8,547,596	8,821,119
Total number of projected fever cases ²	4,132,279	4,356,247	4,486,935
Percent of fever cases tested with an RDT ²	95%	97%	99%
Total RDT Needs ³	5,550,300	8,575,200	7,065,965
Partner Contributions (to PMI target population if not entire area at risk)			
RDTs carried over from previous year ⁴	1,650,888	0	0
RDTs from Government	0	0	0
RDTs from Global Fund	2,907,084	5,716,800	0
RDTs from other donors	0	0	0
RDTs planned with PMI funding ⁵	992,328	1,700,000	1,413,193
Total RDTs Available	5,550,300	7,416,800	1,413,193
Total RDT Surplus (Gap)	0	-1,158,400	-5,652,772

¹ Geographic coverage: 100% of the population is at risk of having malaria.

² The total number of projected fever cases is the reported suspected malaria cases in 2019 HMIS (4,011,921), adjusted by an annual increase of 3% population growth. Consumption data are not accurate, hence % tested is an estimation of 95% of all fever cases reported in 2019 HMIS (3,813,469), and an assumption of 2% improvement on a yearly basis.

³ The 2018 and 6 months of 2019 (January to June) consumption data were analyzed and adjusted for under-reporting. For district that have a very low reporting rate (less than 10%), another district (with similar population) data were used as a proxy. A projection was done using a 3% annual increase based on population growth and a 50% (2021) 20% (2022) buffer were apply. The 50% buffer in 2021 was at the request of Global Fund given that the current grant ends in 2020. With possible delays in the negotiation process for the next grant, it is envisaged there may be a huge delay in the arrival of commodities for 2021. The 50% buffer takes into account the needs for 2021.

⁴ The carryover in 2020 was from the physical count done on 30th September 2019 subtracting the 4th quarter distribution quantity done in October. However, since the quantity recorded in this column is the physical count from the previous year and we are not yet at the end of 2021, the carry over for 2021 is recorded as "0".

⁵ PMI commitment for 2022 is tagged at 20% of the needs.

Artemisinin-based Combination Therapy (ACT) Gap Analysis			
Calendar Year	2020	2021	2022
ACT Needs			
Total country population	8,282,554	8,547,596	8,821,119
Population at risk for malaria	8,282,554	8,547,596	8,821,119
PMI-targeted at-risk population	8,282,554	8,547,596	8,821,119
Total projected number of malaria cases ¹	2,472,164	2,655,513	2,735,178
Total ACT Needs ²	3,739,530	5,777,574	4,760,721
Partner Contributions (to PMI target population if not entire area at risk) ¹			
ACTs carried over from previous year ³	982,321	0	0
ACTs from Government	0	0	0
ACTs from Global Fund	2,091,153	3,851,716	0
ACTs from other donors	0	0	0
ACTs planned with PMI funding ⁴	666,056	1,200,001	952,144
Total ACTs Available	3,739,530	5,051,717	952,144
Total ACT Surplus (Gap)	0	-725,857	-3,808,577

¹ The number of malaria cases were estimated based on adjusted number of cases from 2019 HMIS with a 3% population growth.

² Consumption data were used for forecasting. The 2018 data were analyzed and adjusted for under-reporting. For districts that have a very low reporting rate (less than 10%), another district (with similar population) data was used as a proxy. A 3% annual increase based on population growth was used and 50% (2021) and 20% (2022) buffer stock were added. The 50% buffer in 2021 was at the request of Global Fund given that the current grant ends in 2020. With possible delays in the negotiation process for the next grant, it is envisaged there may be a huge delay in the arrival of commodities for 2021. The 50% buffer takes into account the needs for 2021.

³ The carryover in 2020 was from the physical count done on 30th September 2019 subtracting the 4th quarter distribution quantity done in October. However, since this should be physical count from the previous year and we are not there yet, the carryover is recorded as "0".

⁴ PMI commitment for 2022 is tagged at 20% of the needs.

Injectable Artesunate Gap Analysis			
Calendar Year	2020	2021	2022
Injectable Artesunate Needs			
Projected number of severe cases ¹	122,050	123,293	180,277
Projected number of severe cases among children <5 years of age	44,374	45,358	67,340
Projected number of severe cases among 5 years of age and above	77,676	77,935	112,937
Total Injectable Artesunate vials Needs ²	713,687	718,573	1,054,713
Partner Contributions			
Injectable vials carried over from previous year ³	169,619	0	0
Injectable vials from Government	0	0	0
Injectable vials from Global Fund	0	0	0
Injectable vials from other donors	0	0	0
Injectable vials planned with PMI funding	300,000	0	221,212
Total Injectable Artesunate vials Available	469,619	0	221,212
Total Injectable Artesunate vials Surplus (Gap)	-244,068	-718,573	-833,501

¹ Five percent of malaria cases are expected to progress to severe malaria disease.

² Three vials for < 5 years of age, 6 vials for 5-14 years of age, 9 vials for 14+ years of age; The needs to fill the pipeline are included.

³ The carry over in 2020 was from the physical count done on 30th September 2019 subtracting the 4th quarter distribution quantity done in October.

Rectal Artesunate Suppository (RAS) Gap Analysis			
Calendar Year	2020	2021	2022
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose ¹	<i>Not yet calculated</i>	<i>Not yet calculated</i>	<i>Not yet calculated</i>
Total Artesunate Suppository Needs ²	6,000		
Partner Contributions			
Artesunate suppositories carried over from previous year	0	0	0
Artesunate suppositories from Government	0	0	0
Artesunate suppositories from Global Fund	0	0	0
Artesunate suppositories from other donors	0	0	0
Artesunate suppositories planned with PMI funding	6,000	0	20,000
Total Artesunate Suppositories Available	6,000	0	20,000
Total Artesunate Suppositories Surplus (Gap)	0	0	20,000

¹ There is no data because it is in a pilot stage in four districts.

² The number of suppositories needed is a planned quantity for the pilot stage. It does not reflect the real needs nation-wide.

Annex B. Program Inventory

Figure B1. Category: Vector Control

Activity	Metrics/Criteria	Relative Continuum					Estimate Level
		1	2	3	4	5	
Vector Control	Coverage with vector control intervention(s) with appropriate insecticide(s) given country's insecticide resistance profile	No coverage of malaria endemic areas with a vector control intervention	1-25% of the geographic area of malaria endemic regions covered	26-50% of the geographic area of malaria endemic regions covered	51-75% of the geographic area of malaria endemic regions covered	>75% of the geographic area of malaria endemic regions covered	5
Entomological Monitoring	Insecticide resistance monitoring	No monitoring	Limited monitoring conducted ad hoc	Annual monitoring conducted in limited number of sites, not covering all administrative units; occasional monitoring of molecular mechanisms	Annual monitoring conducted in a greater number of sites with some collaboration with other partners; routine monitoring of some resistance mechanisms	Regular high-quality monitoring in multiple sites per administrative unit considering molecular mechanisms and bioassay data and collaborating with other partners and NMCP	4
Entomological Monitoring	Insectary	No functioning insectaries	Insectary present, but frequent ruptures in rearing and contamination of strains; frequent challenges in meeting needs	Insectary present with full-time staff; some capacity for strain verification; some challenges to get enough mosquitoes and occasional contamination	One or more insectary present; regular verification; rare challenges to get enough mosquitoes; some capacity for strain verification	Highly functioning insectaries with verification of strains, capacity for rearing wild strains, and quality controls in place	3

Entomological Monitoring	Data-based vector control decision-making	No consideration of entomological data	Limited data review; reliance on outdated data; uncoordinated data analysis with limited collaboration with partners	Irregular and incomplete data review from multiple partners, sometimes in collaboration with research and funding partners	Collaborative but irregular review of entomological data, sometimes providing timely evidence for decisions	Collaborative regular review of entomological data from multiple sources for vector control decisions	5
Entomological Monitoring	Vector bionomics monitoring or research	No longitudinal monitoring or research done in country	Limited longitudinal monitoring and research done in country	Regular vector bionomics monitoring and vector control research done in country, but weaker role in decision-making	Regular vector bionomics and vector control research done in country but insufficient to respond to all major needs of the national program	Regular monitoring driven by program priorities alongside research done in country to provide timely data on the best malaria vector control	5
Entomological Monitoring	Institutionalization of funding	No resources	Supported by external partners; no host government funding	Some host country government funding	>50% funded by host country government	Fully funded by host country government	3
ITNs	Consistent distribution channels, in accordance with national strategy	Infrequent campaigns; no continuous distribution	Regular campaigns; no continuous distribution	Regular campaigns; inconsistent continuous distribution	Regular campaigns; at least one well-managed continuous distribution channel	Regular, well-executed campaigns; well-managed continuous distribution channels	5
ITNs	Regular supervision of routine ITN distribution (e.g. HFs, schools, communities)	No regular supervision	0-25% of sites regularly supervised	26-50% of sites regularly supervised	51-75% of sites regularly supervised	>75% of sites regularly supervised	4

ITNs	ITN distribution reporting capabilities	ITNs distributed not reported into LMIS (or other system)	Some ITNs distributed reported routinely	Some ITNs distributed reported routinely but cannot be disaggregated by channel	ITNs distributed reported routinely and disaggregated by channel	All ITNs distributed captured routinely, disaggregated, and reported electronically	5
IRS	Host country government's IRS implementation capacity	N/A, no host country government implemented spray campaign	Very limited capacity to implement minor aspects of spray campaign	Capacity to implement some aspects of spray campaign	Capacity to implement most aspects of spray campaign	Implements spray campaign independently	3
IRS	Institutionalization of funding	N/A, no IRS conducted in country	No host country government funding, only supported by external sources	Limited host country government funding in addition to external sources	>50% funded by host country government in addition to external sources	Fully funded by host country government, no external sources	2
IRS	Coverage of government-implemented spray campaign	N/A, no government-implemented spray campaign	Spray coverage not reported	≥85% coverage in some government-sprayed areas	≥85% coverage in most government-sprayed areas	≥85% coverage in all government-sprayed areas	1
IRS	Host country government and local institution IRS monitoring capacity: IRS quality/residual efficacy	N/A, no IRS conducted in country	No capacity (i.e. no staff hired or trained)	Limited ability to monitor IRS (i.e. staff hired, but need training and rely heavily on external assistance)	Occasional ability to monitor IRS (i.e. staff hired and trained, limited reliance on external assistance)	Independent monitoring for IRS quality/residual efficacy (i.e. fully trained staff without need for external assistance)	1
IRS	Host country government IRS monitoring capacity: environmental compliance	N/A, no IRS conducted in country	No capacity	Limited ability to monitor EC (i.e. staff hired, but need training and rely heavily on external assistance)	Occasional ability to monitor EC (i.e. staff hired and trained, limited reliance on external assistance)	Independent EC monitoring	1

Figure B2. Category: Case Management

Activity	Metrics/Criteria	Relative Continuum					Estimate Level
		1	2	3	4	5	
Community-Based	Coverage of CHWs trained in and providing CM (geographic or numerical target)	No CHWs conducting CM	0-25% of national target met	26-50% of national target met	51-75% of national target met	76-100% of national target met	5
Community-Based	Regular supervision of CHWs in CM as per national QA/QC guidelines	No CHWs regularly supervised in CM	0-25% of CHWs regularly supervised in CM	26-50% of CHWs regularly supervised in CM	51-75% of CHWs regularly supervised in CM	76-100% of CHWs regularly supervised in CM	3
Community-Based	CHW reporting	CHW-managed cases not reported into HMIS	Some CHW-managed cases routinely reported into HMIS	Cases routinely reported into HMIS but not disaggregated from facility-reported cases	Cases routinely reported into HMIS and can be disaggregated from facility-reported cases	All CHW case data routinely captured and reported electronically	4
Community-Based	Institutionalization of funding (salaries and/or other support)	No resources	Only supported by external partners, no host country government funding	Some host country government funding	>50% funded by host country government	Fully funded by host country government	2
Facility-Based	Access to care (within 5 km of a health facility or as per national definition)	0-20% of population has access	21-40% of population has access	41-60% of population has access	61-80% of population has access	>80% of population has access	4
Facility-Based	Regular supervision of public facilities in CM	No regular supervision in CM	1-25% of facilities regularly supervised in CM	26-50% of facilities regularly supervised in CM	51-75% of facilities regularly supervised in CM	>75% of facilities regularly supervised in CM	4

Facility-Based	Drug resistance monitoring	No TES performed in last 3 years	TES performed in last 3 years but results not available	Recent TES results available (within last 3 years) but no training in molecular testing	Recent TES results available (within last 3 years) and in-country staff trained in molecular testing	Recent TES results available (within last 3 years) and in-country capability for molecular testing	3
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Figure B3. Category: Drug-Based Prevention

Activity	Metrics/Criteria	Relative Continuum					Estimate Level
		1	2	3	4	5	
MIP	National MIP policy	No policy	Policy exists but is not comprehensive (does not cover all aspects of MIP: ITN, CM, and if applicable IPTp)	Comprehensive policy exists, but not all WHO recommendations included	Policy meets current WHO recommended MIP prevention	Comprehensive, WHO-aligned policy is actively implemented	5
MIP	Country policy adoption/adaptation of 2016 WHO ANC guidelines	No policy	Country has started discussions for adopting guidelines but still implements FANC	Country has policy with 2016 guidelines but no provision for early delivery of IPTp	Country policy is aligned with 2016 guidelines and has provision for delivery of IPTp at 13-16 weeks	Country policy is aligned with 2016 guidelines, has a provision for delivery of IPTp at 13-16 weeks, and is implemented at facility level	5
MIP	Tracking ANC contacts in the HMIS	Not tracked	First ANC visits tracked in the HMIS	1-3 ANC visits tracked in the HMIS	Up to 4 ANC visits tracked in the HMIS	All ANC visits in line with 2016 guidelines tracked in HMIS	5

MIP	National MIP working group established and coordinating effectively	No working group	Working group formed and meets ad hoc, TORs established	Working group engages in regular coordination but lacks mechanisms to ensure integration across technical areas	Working group coordinates at national level only with malaria and maternal health with limited mechanisms to ensure integration across technical areas	Working group coordinates regularly at national and sub-national level with malaria and maternal health and ensures integration across technical areas	4
MIP	Supportive MIP supervision in health facilities	No regular supervision	1-25% of facilities regularly supervised	26-50% of facilities regularly supervised	51-75% of facilities regularly supervised	>75% of facilities regularly supervised	4
MIP	Routine SP resistance monitoring via biomarkers	No SP resistance monitoring	SP resistance monitoring done in the last 6-10 years	SP resistance monitoring done in the last 4-5 years	SP resistance monitoring done in the last 3 years	SP resistance monitoring done in the last 3 years and results published or being published	5

Figure B4. Category: Supply Chain

Metrics/Criteria	Relative Continuum					Estimate Level
	1	2	3	4	5	
Forecasting and Procurement Planning	Forecasts created ad hoc with no corresponding supply plans developed	Forecasts and supply plans overly reliant on assumptions or outdated/limited data, developed annually, and not necessarily used to inform initial procurements	Forecasts and supply plans incorporating service and/or consumption data are updated semi-annually and inform ongoing procurement actions	With donor support forecasts and supply plans incorporate near real-time services, consumption data, and seasonality; quarterly updates with corresponding changes made to procurement actions	Independent forecasts incorporating near real-time service, consumption data, and seasonality are updated quarterly; supply plans are updated monthly to inform ongoing procurement actions	4

Storage	Quantity and quality of infrastructure, as well as operations at all stock holding levels (central, sub-central/facility), compromise ability to ensure commodities, including ITNs, are adequately protected from damage, deterioration, and loss	Quantity and quality of infrastructure, as well as operations in at least one stock holding level ensure that commodities, including ITNs, are adequately protected from damage, deterioration and loss	Quantity and quality of infrastructure, as well as operations in at least two stock holding levels ensures that commodities, including ITNs are adequately protected from damage, deterioration and loss	With donor support, host country can scale infrastructure requirements, including for routine and campaign ITNs, via outsourced warehousing and ensure quality of infrastructure and operations at all stock holding levels, even those provided through the private sector, adequately protect commodities from damage, deterioration and loss	With very limited or no donor support, host country can scale infrastructure requirements, including for routine and campaign ITNs, via outsourced warehousing and ensure quality of infrastructure and operations at all stock holding levels, even those provided through the private sector, adequately protect commodities from damage, deterioration and loss	3
Inventory Management	SOPs for inventory management non-existent, outdated or unable to be routinely adhered to	Updated SOPs for paper-based inventory management system in place but discrepancies between virtual and actual stock figures are common	SOPs for paper-based inventory management system at lower levels and use of an electronic inventory management at central level (WMS) maintain inventory count accuracy but data on expiration or lot/batch insufficiently tracked	Inventory data, incorporating multiple commodity attributes (quantity, expiration, lot/batch) is digitized in at least two stock holding levels with inventory records considered to be reliable	All inventory data attributes digitized at all stock holding levels with near real-time stock visibility, validated for accuracy, available across all stock holding points	3

<p>Logistics Management Information System</p>	<p>No LMIS available for aggregating, analyzing, validating and displaying logistics data from lower levels of the logistics system</p>	<p>Paper-based LMIS that aggregates and displays logistics data from lower levels of the logistics system is available and used primarily to inform facility level resupply; poor LMIS reporting completeness and timeliness</p>	<p>Paper-based LMIS that aggregates and displays logistics data from lower levels of the logistics system used to inform facility level resupply, produce metrics for performance monitoring, and process improvement initiatives; adequate LMIS reporting completeness and timeliness</p>	<p>LMIS with digitized facility-level inventory and consumption data visible across some supply chain levels used to inform resupply, performance monitoring, process improvement initiatives and strategic planning; good LMIS reporting completeness and timeliness</p>	<p>LMIS with digitized facility-level inventory and consumption data visible across all supply chain levels is operational and integrated with other MIS platforms; excellent LMIS reporting completeness and timeliness</p>	<p>3</p>
<p>Transportation Management</p>	<p>Higher level resupply points irregularly allocate resources for resupplying lower level facilities; lower level facilities often required to provide own transport to retrieve commodities from resupply points; ITN distribution unorganized and inadequately resourced</p>	<p>System exists for transportation from higher to lower stock holding levels but is irregularly executed due to limited planning, lack of funding or incapacitated vehicles; significant donor-supplied transport resources including for ITN distribution</p>	<p>Transportation consistently undertaken per schedule, capacity exists to use third-party transporters, routes are regularized, proofs of delivery reviewed and reconciled; significant donor-supplied transport resources including ITN distribution</p>	<p>Transportation planning regularized and optimized with third-party transport used often, tracking of vehicles via regular check-ins or GPS, paper proofs of delivery reviewed and reconciled, key performance indicators tracked; some donor funding for transportation resources</p>	<p>Transportation scheduling and routing optimized, third-party transporter use regularized, GPS vehicle tracking, electronic proofs of delivery reviewed and reconciled, key performance indicators tracked and 3PL assignments/lanes allocated based on best value; no donor funding</p>	<p>3</p>

<p>Routine Distribution and Resupply</p>	<p>No routine requisition and resupply schedule between stock holding levels</p>	<p>Routine requisition and resupply between at least two stock holding levels according to a schedule but not well informed by consistently accurate demand and inventory figures</p>	<p>Routine resupply between all stock holding levels, informed by adequate demand and inventory accuracy, conducted according to a schedule, validated by malaria program personnel and routinely monitored</p>	<p>Donor-supported routine resupply between all stock holding levels, informed by accurate, near real-time demand signals and validated by malaria program staff, done according to a schedule and routinely monitored</p>	<p>Routine resupply between all stock holding levels, informed by accurate, timely and near real-time demand signals, done with limited or no donor support according to a schedule shared with all levels; malaria program management has visibility into planning, execution and results</p>	<p>2</p>
<p>Health Commodity Regulations and Policy</p>	<p>Legal basis for a medicine (and other health commodity) regulatory agency to function is absent or inappropriate; formal organizational structure for in-country stakeholders and relevant agencies with delegated authority absent or inadequate (e.g., up-to-date organogram of MOH); human and financial capacity to enable regulation weak or absent</p>	<p>Medicines framework exists and is sufficient to support basic regulatory functions including clinical dossier review (licensing) and marketing authorization with registration; documented domestic financial support to enable regulatory activities, including HR</p>	<p>All SDP levels have policies that address STG, quality assurance and HR; no consistent approach to pharmacovigilance or a standard reporting structure for pharmacovigilance events; overall quality management system in place to support interface of product licensing, registration, manufacturing, post-marketing surveillance</p>	<p>Strong policy and strategic leadership by government with firm grasp of budgets and financial sustainability; robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system</p>	<p>MOH leads strategic functions such as policy formulation, quality assurance and oversight of policy implementation funds; ability to ensure product quality, automated drug registration, clear/transparent importation process, robust post-market surveillance system, and track and trace regulations developed or in process of implementation</p>	<p>3</p>

Supply Chain Strategy and Governance	Human, organizational and financial capacity to develop or execute a supply chain strategic plan incorporating malaria SC specifics absent or inadequate	Human, organizational and financial capacity sufficient to develop and execute portions of a supply chain strategic plan incorporating malaria SC specifics	Approved, up-to-date supply chain strategic plan (with clear roles and responsibilities for all SC levels, stakeholder mapping, costs); includes risk mitigation and workforce development plans	Approved, up-to-date supply chain strategic plan (with clear roles and responsibilities for all SC levels, stakeholder mapping, costs); implementation of workforce development and risk mitigation plans with significant donor support	Human, organizational and financial capacity to execute and maintain a supply chain strategic plan incorporating malaria SC specifics present and maintained with minimum donor support	2
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Figure B5. Category: Strategic Information

Activity	Metrics/Criteria	Relative Continuum					Estimate Level
		1	2	3	4	5	
Data, Surveillance, Monitoring & Evaluation	Overall HMIS reporting rate (CY 2019)	<60%	60-69%	70-79%	80-89%	90%+	5
Data, Surveillance, Monitoring & Evaluation	Element-specific reporting rate: "Confirmed malaria cases among children under age 5" (CY 2019)	<60%	60-69%	70-79%	80-89%	90%+	5

<p>Data, Surveillance, Monitoring & Evaluation</p>	<p>HMIS data quality assurance and quality control</p>	<p>Few standards exist for data collection, assembly, and analysis; ad hoc data quality reviews and audits for specific needs; no data-quality assurance plan and national coordinating body exist</p>	<p>Standards used for data collection, assembly and analysis in limited settings; some electronic tools used for data quality review and audit; data-quality assurance plan available</p>	<p>Standards defined and implemented nationally for data collection, assembly, analysis; data quality reviews and audits scheduled and include remediation process for identified issues; SM&E staff seconded to NMCP</p>	<p>Data reviews and audits integrated in strategic plans and conducted on a regular schedule; national data-quality governing body meets regularly; issues identified addressed via established remediation process</p>	<p>Continual review and audit (automated and manual) to ensure defined levels of data quality; data quality metrics used for ongoing improvement; national governing body and key stakeholders review data-quality assurance plan periodically</p>	<p>3</p>
<p>Data, Surveillance, Monitoring & Evaluation</p>	<p>Reporting Systems</p>	<p>Data collection tools not standardized and procedures inconsistently followed; unstructured data collection and storage; no NMCP access to HMIS malaria data</p>	<p>Data systems support longitudinal health data (clinical, surveillance, M&E) in limited settings; data available for centrally mandated reporting; parallel malaria reporting system may exist</p>	<p>Most platforms/applications ensure data availability at all levels for decision support and M&E for authorized users; no parallel malaria reporting system; NMCP has access to HMIS malaria data</p>	<p>Data systems ensure reliable and appropriate access to data at all levels for authorized users; reporting requirement changes accommodated with minimal disruption to data availability; data systems support secondary data use; NMCP has access</p>	<p>Data availability monitored for continual improvements and to meet emerging health sector needs; reporting available from private facilities and community-level providers and can be disaggregated</p>	<p>3</p>

Data, Surveillance, Monitoring & Evaluation	Data collection	Data not collected at community level (CHWs) and irregular or inaccurate at rural and more central health facilities; system is entirely paper based, but registers may be absent	Collection well managed at health facility level, but incomplete at community level; most collection and aggregation is paper based; registers generally available; timeliness and completeness remain challenges	Collection well managed at health facility and community level; most collection is paper based, aggregation is electronic; registers available; timeliness and completeness >80%, feedback to collectors limited	Collection at all levels; collection is electronic and sometimes paper based, aggregation is electronic; registers hold all program critical data; timeliness and completeness >80%, feedback to collectors standardized	Data collection occurs at all levels and is transmitted in real time with timely feedback to collectors and users of data; data checks exist at point of collection; electronic transmission is the norm, including to data collectors	3
Data, Surveillance, Monitoring & Evaluation	Data use	Activities (analysis, interpretation, visualization) to ensure data use are rarely implemented	Limited data use activities are implemented (bulletin developed but analysis and interpretation for decision- making needs strengthening)	Country conducts regular data use activities (review meetings, bulletin at least quarterly, at least at the central level)	Country conducts regular data use activities at all levels (review meetings, bulletins, dashboard at least quarterly)	Country has developed own high-quality dashboard to facilitate data use and informed decision-making is evident at all levels frequently	3
Operations Research and Program Evaluation	PMI in-country OR/PE experience	No previous PMI OR/PE experience in country	PMI team has prepared concept notes but has not completed protocols or conducted OR/PE	PMI team has completed protocols and received approval for OR/PE; studies in planning, underway, or recently completed	PMI team and/or other country partners have completed a OR/PE study and prepared and shared reports	Multiple OR/PE studies completed that address malaria program implementation bottlenecks; publication and sharing of results, with involvement from MOH co-investigators	2

Operations Research and Program Evaluation	Country mechanisms for OR/PE review	No in-country process for research review, determination or IRB processes	Limited in-country processes for research review, determination and IRB oversight	Processes in place for research and IRB review with federalwide assurance approval, but no previous PMI in-country OR/PE engagement	Processes in place for research and IRB review with federalwide assurance approval with previous PMI in-country OR/PE engagement	Full complement of research review, approval, and oversight processes including data safety and monitoring boards; systems for results sharing	3
Operations Research and Program Evaluation	In-country partnerships for OR/PE	No in-country partners (academic, NGO, or other) with OR/PE experience	1-2 in-country partners with OR/PE experience, but no malaria-specific experience	3+ in-country partners with OR/PE experience; 1+ with some malaria expertise; no current PMI OR/PE work	3+ in-country partners with OR/PE experience; 1+ with malaria expertise; current or recent PMI OR/PE work	Multiple in-country partners with malaria experience in PMI OR/PE, including completed past work and reporting on malaria OR/PE	4
Operations Research and Program Evaluation	MOH capacity for conceptualizing problems needing scientific evaluation	No experience	Some but limited experience in identifying programmatic problems and prioritization	Experience with identifying program problems and prioritizing OR/PE	Experience with identifying problems needing OR/PE and developing study approaches with partners	Extensive experience with identification, prioritization, proposal development and conducting OR/PE	4

Figure B6. Category: Support Systems

Activity	Metrics/Criteria	Relative Continuum					Estimate Level
		1	2	3	4	5	
SBC	National malaria SBC strategy to guide design and implementation of malaria SBC activities	No strategy	Strategy exists, but is low quality and missing key elements from the RBM SBC Working Group National Malaria SBC Strategy Template	High-quality strategy exists, but no evidence it has been used to guide design or implementation	High-quality strategy exists and is sometimes used to guide design and implementation of SBC activities	High-quality strategy exists and is used routinely to guide design and implementation of SBC activities	5
SBC	SBC technical working group	No group	Group exists in theory, but has not been operationalized or institutionalized	Group exists and meets routinely, but lacks clear pathways for coordination	Group exists and has effective pathways for coordination, but generally only coordinates at the national level	Group engages effectively in regular coordination at national and sub-national level	4
SBC	Formative assessments	No assessment of any kind conducted in last five years	No assessment of any kind conducted in last three years	Assessment conducted in last three years, but with significant quality issues	High-quality assessment conducted in the past three years, but results not widely disseminated	High-quality assessment conducted in the past three years and results widely disseminated	4

SBC	SBC interventions (targeted and tailored based on available behavioral, demographic, and epidemiological data)	No evidence available data used to inform intervention design	Available evidence referenced in intervention design; results do not typically inform final design, resulting in broad and unfocused SBC interventions	Available evidence generally used to loosely target SBC interventions to specific populations, but interventions not tailored to address behavioral determinants of those populations	Available evidence used to loosely target SBC interventions to specific populations and interventions somewhat tailored to address behavioral determinants of those populations	Available evidence used to target SBC interventions to specific populations and interventions well tailored to address behavioral determinants of those populations	3
SBC	Capacity to support implementation of SBC activities	Generally weak at central and peripheral levels	Generally strong at the central level with sufficient expertise and resources to deliver high-quality SBC interventions	Generally strong at central and provincial levels with sufficient expertise and resources to deliver high-quality SBC interventions	Generally strong at the central, provincial, and district levels with sufficient expertise and resources to deliver high-quality SBC interventions	Generally strong at the central, provincial, district, and community levels with sufficient expertise and resources to deliver high-quality SBC interventions	3
Additional Health Systems Strengthening	Staffing	No staff	Manager and a few technical staff; not all intervention areas covered	Manager and technical staff for each intervention area; many staff have limited training and experience; limited program support staff	Full staffing of program areas and support systems but some staff need further training; limited plans and opportunities for training	Fully staffed with relevant training and experience; complete plan for professional development	3

Additional Health Systems Strengthening	Office space, transport	No office space or transport	Office space exists but is insufficient for staff; transport available at intervals but limited for program needs	Office space adequate for current staff but no growth possible; office not well positioned for access to MOH leadership; transport available but insufficient and not well managed/maintained	Office space adequate for current staff and some technical areas (e.g., lab) but not fully adequate for growth and all technical services; transport mostly sufficient	Office space fully adequate for current staff and technical needs (lab, insectary, meeting space, etc.) and some growth and well positioned in MOH; transport fully available for needs, including trucks and 4-wheel drive vehicles as needed (all maintained and managed)	3
Additional Health Systems Strengthening	Internet connectivity	No internet	Intermittent connectivity; poor bandwidth; challenging maintenance; very little budget	Mostly connected with some outages; ok but not ideal bandwidth; irregular maintenance; modest budget	Generally stable connections, adequate bandwidth for most work, fair to good maintenance and sufficient budget	Fully connected, maintained, good bandwidth for all needs, and sufficient budget including all needed hardware and software	2
Additional Health Systems Strengthening	NMCP placement in MOH	NMCP exists but barely visible in MOH structure	NMCP visible in the MOH structure but NMCP manager reports to supervisor who is low in the MOH system	NMCP visible and manager reports to high-level leader in MOH (e.g., Director of Public Health or Permanent Secretary for Health)	NMCP highly visible and reports at a high level in MOH and has some access to other ministry leadership (e.g., education, agriculture)	NMCP highly visible in MOH and all other relevant ministries with ready access to country leadership (e.g., president/prime minister and parliament)	5