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

UGANDA

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 Uganda to end malaria. PMI has been a proud partner of Uganda since 2006, helping to decrease child death rates by 53 percent through investments totaling almost $444 million.

The proposed PMI fiscal year (FY) 2021 planning budget for Uganda is $31 million. This Malaria Operational Plan (MOP) summary outlines planned PMI activities in Uganda 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 Division (NMCD) 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 Uganda 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 Uganda 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:

- Uganda Malaria Reduction and Elimination Strategic Plan 2021-2025, which is the result of coordinated efforts between the NMCD, PMI, WHO, the Global Fund, and other strategic partners, aims to reduce malaria infections by 50 percent, morbidity by 50 percent and mortality by 75 percent by 2025 through: stratification to ensure appropriate tailoring of intervention mixes for the various epidemiologic contexts, universal coverage of services (including in the private sector), robust data management and social behavioral change, multisectoral collaboration, and malaria elimination in two districts.
- Long Lasting Insecticidal Net Evaluation in Uganda Project (LLINEUP) preliminary results which show that, after 25 months, piperonyl butoxide (PBO) nets are associated with a 14 percent lower parasite prevalence and 44 percent lower parasite density compared to standard nets.

- 2019 preliminary therapeutic efficacy study results which demonstrate that there is still good treatment efficacy for artemether-lumefantrine and dihydroartemisinin-piperaquine.
- 2019 entomology report that confirmed that the main vectors in Uganda remain *Anopheles gambiae s.l.* and *funestus s.l.*, which remain resistant to pyrethroids (with susceptibility restored with PBO) and susceptible to pirimiphos-methyl, clothianidin, and chlorfenapyr.

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

Annex A. Gap Analysis Tables

Insecticide-treated Mosquito Net (ITN) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
Total Targeted Population [1]	41,564,035	42,859,200	41,098,351
Continuous Distribution Needs			
Channel #1: ANC [2]	2,079,180	2,142,960	1,664,483
Channel #2: EPI [3]	1,788,095	1,842,946	1,150,754
Channel #3: School Based distribution [4]	300,000	300,000	853,198
Estimated total need for continuous channels	4,167,275	4,285,906	3,668,435
Mass Campaign Distribution Needs			
2019/2020/2021 mass distribution campaign(s)	42,865,055	0	0
Estimated total need for campaigns [5]	26,195,311	0	0
Total ITN Need: Routine and Campaign	**30,362,586**	**4,285,906**	**3,668,435**
Partner Contributions			
ITNs carried over from previous year	0	0	0
ITNs from MOH	0	0	0
ITNs from Global Fund [6]	15,208,231	867,683	950,530
ITNs from other donors	0	0	0
DFID	1,000,000	0	0
AMF	11,615,080	0	0
ITNs planned with PMI funding [7]	1,350,000	1,300,000	1,584,674
Total ITNs Available	**29,173,311**	**2,167,683**	**2,535,204**
Total ITN Surplus (Gap)	**-1,189,275**	**-2,118,223**	**-1,133,231**

[1] UBOS census report 2014, growth rate of 3.0%. For 2020 mass campaign, refugee population included. For 2022 and 2023, routine nets will not be distributed in IRS districts and select urban areas. These are therefore discounted from the population.

[2] The total national and refugee population was offset by the urban and IRS population; 5% of that population is considered to be for pregnant women; ANC coverage assumed to be 90%.

[3] The total national and refugee population was offset by the urban and IRS population; 4% of the population is under 1 year of age; EPI coverage is projected to be at 70% in 2022.

[4] The enrolment is for schools in high burden areas that are hard to reach is 3,412,790 children; percentage reach is 25%.

[5] 1 net for 1.8 persons in endemic areas (WHO recommended) plus 10% buffer included because of old census data (WHO recommendations).

[6] Global Fund grant public commitments for the period 2021 and 2022 not yet determined, included is what has been proposed in the application.

[7] PMI provides nets for the PNFP sector, estimated at what percent of total need.

[8] To be confirmed.

Sulfadoxine-Pyrimethamine (SP) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
Total population at risk [1]	41,564,035	42,859,209	45,422,152
SP Needs			
Total number of pregnant women [2]	2,078,202	2,142,960	2,271,108
Total SP Need (in treatments) [3]	**5,840,187**	**6,019,338**	**5,853,950**
Partner Contributions			
SP carried over from previous years	0	0	0
SP from Government	5,840,187	6,019,338	5,853,950
SP planned with PMI funding	0	0	0
Total SP Available	**5,840,187**	**6,019,338**	**5,853,950**
Total SP Surplus (Gap)	**0**	**0**	**0**

[1] UBOS census report 2014, growth rate of 3.0%
[2] 5.0% of the population is made up of pregnant women (2016 UDHS report). ANC coverage is assumed 99% (2019) & 100% (2020 & 2021).
[3] Based on NSP 2020-2025, Uganda will be implementing IPT4 and the assumptions are: IPTp1 target of 93%, IPTp2 target of 90%, IPTp3 target of 70%, and IPTp4 of 65% for 2022.

Rapid Diagnostic Test (RDT) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
RDT Needs			
Total country population[1]	41,583,600	42,859,200	45,422,152
Population at risk for malaria [2]	41,583,600	42,859,200	45,422,152
PMI-targeted at-risk population [3]	41,583,600	42,859,200	45,422,152
Total number of projected fever cases [4]	41,027,943	39,643,592	41,995,788
Percent of fever cases tested with an RDT [5]	70%	70%	90.4%
Total RDT Needs	**28,743,168**	**27,773,326**	**37,967,983**
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year [6]	1,832,725	5,808,675	5,518,519
RDTs from Government [7]	0	0	0
RDTs from Global Fund [8]	28,815,850	26,233,170	34,780,773
RDTs from other donors [9]	742,400	0	0
RDTs planned with PMI funding [10]	2,850,000	1,250,000	1,250,000
Total RDTs Available	**34,240,975**	**33,291,845**	**41,549,292**
Total RDT Surplus (Gap)	**5,497,807**	**5,518,519**	**3,581,309**

[1] National population projections based on UBOS 2014 Census.
[2] Assumes 100% at risk due to malaria endemicity.
[3] PMI is expected to cover the PNFP sector estimated at 10% of the national need for RDTs.
[4] This is based on epidemiological annual estimates (i.e. fevers that are suspected as malaria cases) per age group: under 5 years of age (18% of population) to have 4.3 episodes of fever/year, 5-9 years of age (16% of population) to have 2 episode/year, 10-14 years of age (14% of population) to have 1 episodes/year, and above 14 years of age (52% of population) to have 0.5 episodes/year. Projected targets of 87% based on the National Strategic Plan 2020/2025, a weighted national target taking into account the public, community, and private sectors. 54.4% and 16.5% of malaria cases (2022) to seek care in Public+PNFP sector and community (ICCM) respectively.
[5] The total is less the number of suspected fevers reduced due to vector control. Uganda is conducting mass distribution of ITNs in 2020 to sustain universal coverage. Analysis of MIS 2014 & 2009 data shows a 5% annual reduction in malaria prevalence following net distribution. Additionally, projection models from swisTPS indicate a 15% and 18.7% reduction in 2022 and 2023. Target coverage of testing of fever cases by sector: 62.6% (public+ PNFP), 19% (community), and 18.4% (private) sector. Country target for microscopy vs RDT by sector: public (87.5% will test using mRDTs), community (100% will test using mRDTS), and private (78% will test using mRDTs).
[6] A calculated surplus to be carried over from pipeline tool which incorporates actual and projected consumptions for 2020 and 2021. Opening stock was obtained and included this as opening stock for 2020 and 2021.
[7] GOU currently not procuring RDTs.
[8] Figure drawn from draft GF grant application for the period 2021-2023 which is currently under review.
[9] GF commitments not yet confirmed but included in the concept note.
[10] PMI is expected to cover the PNFP sector estimated at 10% of the public sector need for mRDTs. DHIS2 data analysis 18 months (Jan. 2018-Jun. 2019). The figure also includes iCCM need.

Artemisinin-based Combination Therapy (ACT) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
ACT Needs			
Total country population [1]	41,583,600	42,859,200	45,422,152
Population at risk for malaria [2]	41,583,600	42,859,200	45,422,152
PMI-targeted at-risk population [3]	41,583,600	42,859,200	45,422,152
Total projected number of malaria cases [4]	18,567,105	17,216,247	19,566,998
Total ACT Needs	**18,567,105**	**17,216,247**	**19,566,998**
Partner Contributions (to PMI target population if not entire area at risk)			
ACTs carried over from previous year [5]	5,883,240	11,490,930	9,746,204
ACTs from Government [6]	1,571,885	1,571,885	1,560,000
ACTs from Global Fund [7]	18,877,530	13,804,636	14,695,610
ACTs from other donors [8]	0	0	0
ACTs planned with PMI funding [9]	1,368,000	95,000	1,376,066
Total ACTs Available	**27,700,655**	**26,962,451**	**27,377,880**
Total ACT Surplus (Gap)	**9,133,550**	**9,746,204**	**7,810,882**

[1] National population projections based on UBOS 2014 Census.
[2] Assumes 100% at risk due to malaria endemicity.
[3] PMI is expected to cover the PNFP sector estimated at 10% of the national need for ACTs. DHIS2 Data analysis 18 months (Jan. 2018 - Dec. 2019).
[4] This is based on epidemiological annual estimates (i.e. fevers that are suspected as malaria cases) per age group: under 5 years of age (18% of population) to have 4.3 episodes of fever/year; 5-9 years of age (16% of population) to have 2 episode/year; 10-14 years of age (14% of population) to have 1 episode/year; and above 14 years of age (52% of population) to have 0.5 episodes/year. The total is less than the number of suspected fevers reduced due to vector control (Uganda is conducting mass distribution of ITNs in 2020 to sustain universal coverage. Analysis of MIS 2014 & 2009 data shows a 5% annual reduction in malaria prevalence following net distribution. Additionally, projection models from swisTPS indicate a 21%, 15%, and 15% reduction in 2021, 2022, and 2023 respectively. The number of cases are determined through diagnosis. Weighted national target is taking into account the public, community, and private sectors and compliance to the testing results (79.9% [2020], 86% [2021], and 87% [2022] - based on analysis of HMIS2/DHIS2 data 2019) and 37% test positivity rate. 54.4% and 16.5% of malaria cases (2022) to seek care in public+PNFP sector and community (ICCM) respectively.
[5] A calculated surplus to be carried over from pipeline tool which incorporates actual and projected consumptions for 2020 and 2021. Opening stock was obtained and included this as opening stock for each year.
[6] Government's contribution.
[7] Figure drawn from draft GF grant application for the period 2021-2023 which is currently under review.
[8] DFID/UNICEF - no commitments confirmed.
[9] PMI is expected to cover the PNFP sector estimated at 10% of the national need for ACTs (DHIS2 data analysis).

Injectable Artesunate Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
Injectable Artesunate Needs			
Projected number of severe cases [1]	825,205	765,167	924,321
Total Injectable Artesunate Vials Needs [2]	**4,401,091**	**4,080,888**	**2,011,323**
Partner Contributions			
Injectable vials carried over from previous year [3]	1,462,373	0	0
Injectable vials from Government [4]	0	0	0
Injectable vials from Global Fund [5]	1,842,725	2,701,113	1,810,191
Injectable vials from other donors	0	0	0
Injectable vials planned with PMI funding [6]	100,000	150,000	150,000
Total Injectable Artesunate Vials Available	**3,405,098**	**2,851,113**	**1,960,191**
Total Injectable Artesunate Vials Surplus (Gap)	**-995,993**	**-1,229,775**	**-51,132**

[1] 5% of the uncomplicated malaria cases are estimated to progress to severe malaria (DHIS2 data 2017-2019). 50% of severe malaria cases will be managed through public health facilities. 50% will be managed through private health facilities.
[2] An average of 4 vials of artesunate (60mg vial) is required for each patient. Assumed that 70% and 54% severe malaria cases to be managed in public and PNFP sector in 2021 and 2022 respectively.
[3] Opening stock is obtained from PIPELINE TOOL, which also includes data on actual consumptions and shipments.
[4] GOU is not providing injectable artesunate.
[5] Figure drawn from draft GF grant application for the period 2021-2023 which is currently under review.
[6] PMI is expected to cover the PNFP sector estimated at 10% of the national need for injectable artesunate.

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	4

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	4
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	4
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	3
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	3

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	4
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	4
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	3
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)	4
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	4

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	3
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	2
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	4

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	4

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	2

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	3

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	4
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 a 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

Logistics Management Information System	No LMIS available for aggregating, analyzing, validating and displaying logistics data from lower levels of the logistics system	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	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	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	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	4
Transportation Management	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	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	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	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	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	4

Routine Distribution and Resupply	No routine requisition and resupply schedule between stock holding levels	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	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	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	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	2
Health Commodity Regulations and Policy	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	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	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	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	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	3

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	1

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%+	4
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

Data, Surveillance, Monitoring & Evaluation	HMIS data quality assurance and quality control	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	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	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	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	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	3
Data, Surveillance, Monitoring & Evaluation	Reporting Systems	Data collection tools not standardized and procedures inconsistently followed; unstructured data collection and storage; no NMCP access to HMIS malaria data	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	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	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	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	3

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	4

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	4
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	4
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	2
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	4

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)	2
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)	2