PMI | 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

KENYA

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 Kenya to end malaria. PMI has been a proud partner of Kenya since 2007, helping to decrease child death rates by 55 percent through investments totaling almost $407 million.

The proposed PMI fiscal year (FY) 2021 planning budget for Kenya is $33.5 million USD. This Malaria Operational Plan (MOP) summary outlines planned PMI activities in Kenya 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 Division of National Malaria Program (DNMP) 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 Kenya 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 Kenya's program. See **MOP FY 2020 Kenya, 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. These guidelines and strategies are linked to the Kenya Malaria Strategy 2019-2023, released last year.

- **Integrated Vector Control Strategy for Malaria Control 2020-2024:** Guides DNMP in the development of existing as well as new interventions targeting the main malaria vectors in Kenya. It provides a detailed analysis of the malaria situation, vector species bionomics, insecticide resistance, as well as coverage and use of interventions to set the basis on which recommendations of interventions are based.

- **Kenya Malaria Vector Surveillance Operational Guidelines 2019-2024:** Outlines the broad malaria vector surveillance techniques and evaluation of vector control tools deployed by the DNMP.

- **Kenya Indoor Residual Spraying (IRS) Implementation Strategy 2019-2024:** Serves as a guide for the DNMP, county health management teams, and other stakeholders to

implement IRS in Kenya.

- **Insecticide Resistance Management Plan 2020-2024:** Enhances the development and implementation of appropriate insecticide resistance monitoring and management strategies that will maintain the effectiveness of existing insecticidal vector control interventions.

- **Malaria Epidemic Preparedness and Response in Kenya - Training Course Facilitator's Guide - March 2020:** Facilitates continuous capacity development for malaria epidemic preparedness and response at subnational levels. It comprises training, planning for, and implementation of epidemic preparedness and response activities, including prediction, detection, and effective responses to contain malaria epidemics.

- **Guidelines for Malaria Epidemic Preparedness and Response in Kenya 2020:** Aligns epidemic preparedness and response guidelines to the Kenya Malaria Strategy 2019-2023 and the 2018 WHO Malaria Surveillance Manual. It includes a checklist to assess epidemic preparedness and response capacity from community to national level.

- **Malaria Epidemic Preparedness and Response Rapid Assessment Report 2020:** Presents findings of an assessment conducted to assess preparedness capacity and identify gaps and resource needs in ten selected counties where epidemic preparedness and response capacity building was conducted in early 2019.

- **Malaria Supportive Supervision Guidelines and Checklists 2020:** Redefines supportive supervision relative to traditional supervision, links learning activities to gaps in data trends, and employs on-the-job training to improve healthcare worker competencies.

For more information about the malaria situation, malaria control progress, and intervention-specific data in Kenya, 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 [1]	35,812,631	36,196,034	36,583,139
Continuous Distribution Needs			
Channel #1: ANC [2]	1,138,447	1,174,830	1,199,606
Channel #2: EPI/CWC [3]	1,042,827	1,089,840	1,137,725
Channel #3: CCND [4]	0	0	344,868
Estimated total need for continuous channels	2,181,274	2,264,670	2,682,199
Mass Campaign Distribution Needs			
2020/2021 mass distribution campaign(s) [5]	15,707,752	0	0
Estimated total need for campaigns	15,707,752	0	0
Total ITN Need: Routine and Campaign	**17,889,026**	**2,264,670**	**2,682,199**
Partner Contributions			
ITNs carried over from previous year	125,184	234,485	106,039
ITNs from MOH	0	0	0
ITNs from Global Fund	12,611,428	0	0
ITNs from other donors	0	0	0
ITNs planned with PMI funding [6]	5,386,899	2,136,224	2,400,000
Total ITNs Available	**18,123,511**	**2,370,709**	**2,506,039**
Total ITN Surplus (Gap)	**234,485**	**106,039**	**-176,161**

[1] 36 counties targeted for routine ANC and EPI/CWC: Lake endemic, coast endemic, highland epidemic, certain semi-arid and low risk counties
[2] *ANC calculation*: estimated by multiplying ANC attendance (95%, 97% and 98% in 2020, 2021 and 2022) by the number of expected pregnant women in the target counties (3.46% of the population)
[3] *EPI calculation*: estimated by multiplying the current EPI coverage (pentavalent 1) in DHIS2 (88%, 91%, 94% in 2020, 2021 and 2022) by the expected population of children under one year in the target counties
[4] *Continuous Community Net Distribution*: New channel for consideration in 2022 in one or two counties. NetCalcR software was used that takes into account the population, current ITN coverage, target coverage and ITNs to be distributed through other channels.
[5] 23 counties targeted for mass campaign: Lake endemic, coast endemic, highland epidemic. The population figures were divided by 1.8 to arrive at the ITNs required for mass distribution.
[6] 2020 Nets: 3,096,324 PBO ITNs for mass campaign in Bungoma, Busia and Kakamega; 328,800 PBO ITNs for routine distribution for the same counties; 1,961,775 ITNs for routine distribution in the other 33 counties.

Sulfadoxine-Pyrimethamine (SP) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
Total Population at Risk	15,964,756	16,154,586	16,347,232
SP Needs			
Total number of pregnant women[1]	552,931	559,456	566,069
Total SP Need (in treatments)[2,3]	**927,711**	**949,248**	**961,932**
Partner Contributions			
SP carried over from previous years	686,868	1,183,524	1,300,943
SP from Government	257,700	1,066,667	1,033,333
SP from Global Fund	0	0	0
SP from other donors	0	0	0
SP planned with PMI funding[4]	1,166,667	0	0
Total SP Available	**2,111,235**	**2,250,191**	**2,334,276**
Total SP Surplus (Gap)	**1,183,524**	**1,300,943**	**1,372,344**

Note: Numbers are derived from the 2019 national malaria quantification report (October 2019).

[1] The total number of pregnant women is estimated at 3.46% of the total population in the areas targeted for IPTp. This is based on estimates by the Kenya National Bureau of Standards (KNBS).

[2] The number of treatments are calculated using the total number of pregnant women attending ANC and estimating the percentage who will attend ANC1, ANC2, ANC3 & ANC4 to receive IPTp.

[3] Quantities represent number of treatments and not the number of tablets. One treatment of IPTp comprises 3 SP tablets.

[4] 3,500,000 SP tablets ordered for 2019 will arrive in 2020 due to importation waiver delays. PMI will not procure SP for 2021 and 2022.

[5] Additional parameters added to take into account ANC attendance, eligibility for IPTp (women on co-trimoxazole prophylaxis not eligible), and wastage due to use of 1,000 pack (being phased out by 2021).

Rapid Diagnostic Test (RDT) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
RDT Needs			
Total country population	50,319,252	50,837,256	51,360,593
Population at risk for malaria	50,319,252	50,837,256	51,360,593
PMI-targeted at-risk population [1]	50,319,252	50,837,256	51,360,593
Total number of projected fever cases [2]	27,041,416	22,309,570	20,324,186
Percent of fever cases tested with an RDT	45%	45%	45%
Total RDT Needs	**8,518,046**	**9,035,376**	**8,688,589**
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year	471,639	4,393,593	4,858,217
RDTs from Government	0	0	0
RDTs from Global Fund	5,940,000	0	4,450,000
RDTs from other donors	0	0	0
RDTs planned with PMI funding [3]	6,500,000	9,500,000	4,500,000
Total RDTs Available	**12,911,639**	**13,893,593**	**13,808,217**
Total RDT Surplus (Gap)	**4,393,593**	**4,858,217**	**5,119,628**

Note: The quantities required are drawn from the 2019 national malaria quantification report of October 2019. The quantification report was finalized before the Census exercise and therefore the population figures have not yet been updated to reflect the census figures which were released in early 2020. Since Kenya has fairly complete and reliable facility level LMIS data, consumption method was used as a starting point to estimate commodity needs followed by application of a number of programmatic assumptions on testing rates and compliance to treatment guidelines.

[1] Geographic coverage is the entire target area at risk based on the latest national quantification.

[2] Projected fever cases was worked backwards from RDTs needed, RDT share and testing rate (70% for 2020; projected to improve to 90% and 95% in 2021 and 2022 respectively).

[3] Some PMI-funded RDTs planned for 2019 delivered in 2020 due to importation waiver delays.

[4] The surplus includes the needs to fill the pipeline to the minimum of 6 months of stock.

Artemisinin-based Combination Therapy (ACT) Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
ACT Needs			
Total country population	50,319,252	50,837,256	51,360,593
Population at risk for malaria	50,319,252	50,837,256	51,360,593
PMI-targeted at-risk population[1]	50,319,252	50,837,256	51,360,593
Total projected number of malaria cases	8,175,322	7,004,491	6,310,358
Total ACT Needs	**8,175,322**	**7,004,491**	**6,310,358**
Partner Contributions (to PMI target population if not entire area at risk)			
ACTs carried over from previous year	2,761,707	3,438,135	3,933,644
ACTs from Government	0	0	0
ACTs from Global Fund	5,270,000	0	4,320,000
ACTs from other donors	0	0	0
ACTs planned with PMI funding[2]	3,581,750	7,500,000	2,300,000
Total ACTs Available	**11,613,457**	**10,938,135**	**10,553,644**
Total ACT Surplus (Gap)[3]	**3,438,135**	**3,933,644**	**4,243,286**

Note: The quantities required are drawn from the 2019 national malaria quantification report of October 2019. The quantification report was finalized before the Census exercise and therefore the population figures have not yet been updated to reflect the census figures which were released in early 2020. Since Kenya has fairly complete and reliable facility level LMIS data, consumption method was used as a starting point to estimate commodity needs followed by application of a number of programmatic assumptions on testing rates and compliance to treatment guidelines.

[1] Geographic coverage is the entire target area at risk based on the latest national quantification.

[2] PMI ACTs include some AL6 and AL12 procured in 2019 but to be delivered in 2020 due to importation waiver delays.

[3] The surplus includes the needs to fill the pipeline to the minimum of 6 months of stock.

Summary of methodology for ACT forecast

- Actual ACT consumption for the base year (2019), the reported consumption from DHIS2 for January to November 2019 was adjusted for reporting rate, and stock out levels. The consumption for November and December 2019 was estimated from historical figures.
- For the forecast, it was assumed that the requirement of AL would increase at the stipulated population growth rate for each of the forecast years.
- The AL requirements for each year were then adjusted for the factors below:

1. Change in testing rate over time (58% in 2019; expected to increase to 70%, 90% and 95% in 2020, 2021 and 2022 respectively)
2. Change in compliance to treatment guidelines for test positive cases over time (96.3% in 2019; expected to increase to 97%, 98% and 98% in 2020, 2021 and 2020 respectively)
3. Change in non-compliance to treatment guidelines for test negative cases over time (5% in 2019; expected to decrease to 3%, 2% and 2% in 2020, 2021 and 2020 respectively)
4. Change in non-compliance to treatment guidelines for non-tested cases over time (6% in 2019; expected to decrease to 4%, 3.5% and 3% in 2020, 2021 and 2020 respectively)
5. Effect of vector control measures - mass distribution of ITNs etc. (vector control measures expected to decrease cases by 10%, 20% and 15% in 2020, 2021 and 2022 respectively. The higher decrease in 2021 is due to effects of the 2020 mass net distribution campaign. These percentage reductions were consensus estimates partly based on review of historical data)

Injectable Artesunate Gap Analysis			
Calendar Year	**2020**	**2021**	**2022**
Injectable Artesunate Needs			
Projected number of severe cases [1]	245,298	177,368	204,404
Projected # of severe cases among children	181,520	131,252	151,259
Projected # of severe cases among adults	63,777	46,116	53,145
Total Injectable Artesunate Vials Needs [2]	**1,300,078**	**940,050**	**1,083,339**
Partner Contributions			
Injectable artesunate vials c/f from previous year	400,117	596,939	656,889
Injectable artesunate vials from Government	800,000	200,000	550,000
Injectable artesunate vials from Global Fund	300,000	300,000	350,000
Injectable artesunate vials from other donors	0	0	0
Injectable artesunate vials planned with PMI funding [3]	396,900	500,000	250,000
Total Injectable Artesunate Vials Available	**1,897,017**	**1,596,939**	**1,806,889**
Total Injectable Artesunate Vials Surplus (Gap) [4]	**596,939**	**656,889**	**723,550**

Note: The quantities required are drawn from the 2019 national malaria quantification report.
[1] ~3% of malaria cases are expected to be severe malaria. There is no reliable source of service data for severe malaria in Kenya; therefore, this ratio was calculated based on consumption data and assuming that 74% of severe malaria cases will affect patients <15 years. These percentages were based on a small dataset (provided by Impact Malaria) from 31 admitting health facilities in the 8 lake endemic counties collected between December 2019 to February 2020.
[2] Average number of vials needed per case is 5 vials for patients from 0 to <15 years; and 9 vials for patients 15 years and above. All cases of severe malaria are expected to be treated with injectable artesunate.
[3] Some PMI-funded injectable artesunate planned for 2019 was delivered in 2020 due to importation waiver delays.
[4] The surplus includes the needs to fill the pipeline to the minimum of 6 months of stock.