

# PMI

# U.S. PRESIDENT'S MALARIA INITIATIVE

LED BY



**USAID**  
FROM THE AMERICAN PEOPLE



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

## ETHIOPIA

### 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 Ethiopia to end malaria. PMI has been a proud partner of Ethiopia since 2008, helping to decrease children under-five mortality rates from 123 deaths per 1,000 live births in 2005 to 55 deaths per 1,000 live births in 2019 (Ethiopia Mini-Demographic and Health Survey, 2019) through investments totaling almost \$445 million.

The proposed PMI fiscal year (FY) 2021 planning budget for Ethiopia is \$35 million. This Malaria Operational Plan (MOP) summary outlines planned PMI activities in Ethiopia for FY 2021. See accompanying **FY 2021 Budget Tables** (Tables 1 and 2) for activities and budget amounts, available on [pmi.gov](http://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 Ethiopia context and health system. Proposed PMI investments will support and build on those made by the Government of Ethiopia 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 Ethiopia program. See **MOP FY 2020 Ethiopia, Annex B: Program Inventory**. 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.

The Malaria Program Review (MPR) conducted by the NMCP in March 2020 revealed that between 2016 and 2019, the number of confirmed malaria cases and deaths due to malaria declined by 47 percent and 58 percent, respectively. The program has achieved the targets of the national strategic plan with regards to malaria morbidity and mortality. Ethiopia faces several technical challenges which can undo the tremendous progress made to date such as the potential emergence of histidine-rich protein 2 deletions, the geographical expansion of *Anopheles stephensi*, and the rate of outdoor feeding by all malaria vectors that require novel or alternative vector control interventions.

The MPR recommends accelerating the implementation of malaria control and elimination interventions as per the National Malaria Strategic Plan and guidelines in targeted areas to attain further decline in malaria cases and reduction in mortality and achieve malaria elimination. Recognizing the importance of the availability and timely access to quality malaria data, the

MPR suggested establishing a surveillance system capable of real-time data reporting, tracking of key indicators and case/foci-based investigation and response activities particularly for elimination targeted districts. The MPR also recommended reviewing the Health Management Information System (HMIS) and Public Health Emergency Management (PHEM) to include relevant malaria indicators like malaria suspected cases, number of pregnant women with malaria, laboratory external quality assessment participation and performance. In addition, the NMCP envisages to engage the private sector for malaria prevention and control and explore the possibility of introducing additional interventions (e.g. intermittent preventive treatment for pregnant women [IPTp] and mass drug administration) in high malaria burden areas of the country in an attempt to significantly reduce the burden of malaria in targeted areas.

For more information about the malaria situation, malaria control progress, and intervention-specific data in Ethiopia, please refer to the FY 2020 MOP available on [pmi.gov](http://pmi.gov).

# **Annex A. Gap Analysis Tables**

<b>Long-lasting Insecticide-treated Mosquito Net (LLIN) Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Total targeted population <sup>1</sup>	12,438,188	26,595,662	28,705,969
<b>Continuous Distribution Needs</b>			
Channel #1: ANC	0	0	0
Channel #2: EPI	0	0	0
<b>Mass Distribution Needs</b>			
Mass distribution campaign	6,910,104	14,775,368	15,947,761
<i>Estimated total need for campaigns</i>	6,910,104	14,775,368	15,947,761
<b>Total Calculated Need Continuous and Campaign <sup>2</sup></b>	<b>7,255,610</b>	<b>15,514,136</b>	<b>16,745,149</b>
<b>Partner Contributions</b>			
LLINs carried over from previous year	290,859	0	0
LLINs from Government	0	0	0
LLINs from Global Fund <sup>3</sup>	3,189,620	0	0
LLINs from other donors	0	0	0
LLINs planned with PMI funding <sup>4</sup>	3,457,553	2,810,219	2,918,085
<b>Total LLINs Available</b>	<b>6,938,032</b>	<b>2,810,219</b>	<b>2,918,085</b>
<b>Total LLINs Surplus (Gap) <sup>5</sup></b>	<b>(317,578)</b>	<b>(12,703,917)</b>	<b>(13,827,064)</b>

<sup>1</sup> The total targeted population (12,438,188) to be covered in 2020 are in Benishangul-Gumuz, Gambella, Tigray, Afar and SNNP regions. In 2021, the targeted population (26,595,662) to be covered are in Somali, Harar, Direedawa, Amhara and Oromia regions of Ethiopia. The targeted population for 2022 (28,705,969) are in Amhara, Oromia and SNNP regions.

<sup>2</sup> The total LLINs need for campaigns include 5% for buffer.

<sup>3</sup> Global Fund procurement of LLINs is not yet known for 2021 and 2022 (NMCP is conducting a malaria program review and writing a proposal for Global Fund grant application).

<sup>4</sup> The new LLINs (3,457,553) to be procured by PMI funds in 2020 will be 2,849,753 LLINs from the FY19 MOP and additional funding that has been reprogrammed from the FY18 MOP to procure 607,800 LLINs. In addition, 3,189,620 LLINs will be procured by Global Fund in 2020. PMI will procure 2.8 million LLINs in 2021 and 2.9 million LLINs in 2022.

<sup>5</sup> PMI Ethiopia team is exploring possibilities for reducing the 2020 LLIN gap including reprogramming previous year funding. PMI will work with GFATM to fill the gap given they historically supported for LLIN procurement.

<b>Rapid Diagnostic Test (RDT) Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>RDT Needs</b>			
Total country population	99,383,176	101,967,138	104,618,284
Population at risk for malaria <sup>1</sup>	59,629,906	61,180,283	62,770,970
PMI-targeted at-risk population	59,629,906	61,180,283	62,770,970
Total number of projected fever cases <sup>2</sup>	12,114,200	11,508,490	10,933,066
Percent of fever cases tested with an RDT <sup>3</sup>	70%	70%	70%
<b>Total RDT Needs <sup>4</sup></b>	<b>9,751,931</b>	<b>9,264,334</b>	<b>8,801,118</b>
<b>Partner Contributions (to PMI target population if not entire area at risk)*</b>			
RDTs carried over from previous year	2,189,425	0	2,175,416
RDTs from Government	0	0	0
RDTs from Global Fund <sup>5</sup>	7,551,693	11,439,750	0
RDTs from other donors	0	0	0
RDTs planned with PMI funding	0	0	0
<b>Total RDTs Available</b>	<b>9,741,118</b>	<b>11,439,750</b>	<b>2,175,416</b>
<b>Total RDT Surplus (Gap) <sup>6</sup></b>	<b>(10,813)</b>	<b>2,175,416</b>	<b>(6,625,702)</b>

<sup>1</sup> Population at risk: 60% of the population is at risk for malaria.

<sup>2</sup> The total number of projected fever cases is calculated based on total malaria cases obtained from HMIS 2017 which is 1,755,748. Adjustments to HMIS 2017 data were made as follows. Based on expert opinion, 25% of HMIS cases is added to account for the migrant population and refugees not captured by HMIS, which is 25% X 1,755,748=438,937. Based on HMIS, 24.1% of malaria patients go to a private health facility, which is not captured by the routine HMIS, so we added 24.1% x 1,755,748=423,135. The total estimated malaria cases is therefore 2,617,820. Since the malaria positivity rate is 24.5%, the estimated number of fever cases is 10,684,980. The expected number of people to be tested during reactive case detection is calculated by assuming each health post in 20% of the 239 elimination targeted woredas will conduct reactive case detection for at least one case per week. Five households will be tested for each index case. Each household has an average size of 4.6 people. 25 health posts on average in each woreda X 20% X 239 woredas X 5 households X 4.6 people per household X 52 weeks gives 1,429,220 people. The total number of people eligible for testing is 10,684,980 + 1,429,220=12,114,200. The quantification included assumptions of fever cases to decrease by 5% in 2021 and 2022 based on trends of fever in malaria indicator surveys.

<sup>3</sup> Percent of fever cases tested with an RDT: The target population for RDTs and microscopy was estimated by considering service-based forecast, based on the information obtained from HMIS (RDT: 70%; microscopy: 30%).

<sup>4</sup> Total RDT needs data includes 15% for buffer and wastage.

<sup>5</sup> The GF procurement of RDTs for 2022 is unknown at this time.

<sup>6</sup> PMI Ethiopia team is exploring possibilities for reducing the CY 2020 RDT gap including reprogramming previous year funding. PMI will work with GFATM to fill the gap given they historically supported for RDT procurement.

<b>Artemisinin-based Combination Therapy (ACT) Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>ACT Needs</b>			
Total country population	99,383,176	101,967,138	104,618,284
Population at risk for malaria	59,629,906	61,180,283	62,770,970
PMI-targeted at-risk population <sup>1</sup>	59,629,906	61,180,283	62,770,970
Total number of <i>P. falciparum</i> cases <sup>2</sup>	2,283,417	2,283,417	2,055,075
Total projected number of ACT treatment courses needed <sup>3</sup>	2,283,417	2,283,417	2,055,075
<b>Total ACT Treatment Courses Needs <sup>4</sup></b>	<b>2,625,930</b>	<b>2,625,930</b>	<b>2,363,337</b>
<b>Partner Contributions (to PMI target population if not entire area at risk) <sup>1</sup></b>			
ACTs carried over from previous year	1,310,850	1,818,270	2,522,341
ACTs from Government	0	0	0
ACTs from Global Fund <sup>4</sup>	3,133,350	3,330,000	0
ACTs from other donors	0	0	0
ACTs planned with PMI funding <sup>5</sup>	0	0	0
<b>Total ACTs Available</b>	<b>4,444,200</b>	<b>5,148,270</b>	<b>2,522,341</b>
<b>Total ACT Surplus (Gap)</b>	<b>1,818,270</b>	<b>2,522,341</b>	<b>159,004</b>

<sup>1</sup> Population at risk: 60% of the population is at risk for malaria.

<sup>2</sup> The estimated number of malaria cases is calculated based on total malaria cases obtained from HMIS 2017 which is 1,755,748. Adjustments to HMIS 2017 data is made as follows. Based on expert opinion, 25% of HMIS cases is added to account for the migrant population and refugees not captured by HMIS which is 25% X 1,755,748=438,937. Expected cases by reactive case detection is calculated by assuming 1.2% of tested will be positive (MIS 2015 malaria prevalence by RDT). Estimated number of people to be tested is calculated based on the following assumption. Each health post in 20% of the 239 elimination targeted woredas will conduct reactive case detection for at least one case per week. Therefore, 25 health posts on average in each woreda X 20% X 239 woredas X 5 households X 4.6 people per household X 1.2% positive cases expected X 52 weeks gives 17,151 cases. Based on HMIS, 24.1% of malaria patients go to a private health facility, which is not captured by the routine HMIS, so we added 24.1% x 1,755,748=423,135. The total estimated malaria cases is therefore 2,634,971. 70% of total malaria cases are due to *P. falciparum* (70% X 2,634,971=1,844,480). NMCP has planned to start mass drug administration in high transmission areas and, since there is no past experience with this, based on expert opinion we added 25% of HMIS which is 25% X 1,755,748=438,937. The total number of people that require ACT treatment is therefore 1,844,480 + 438,937=2,283,417. Reduction of cases is not expected for 2021 due to El Niño, but 10% reduction is assumed for 2022.

<sup>3</sup> Total ACT needs are based on estimated case data including a 15% for buffer and wastage.

<sup>4</sup> The GF procurement of ACTs for 2022 is unknown at this time.

<sup>5</sup> PMI will not procure ACTs as the need is covered by the Global Fund.

<b>Chloroquine (CQ) Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Chloroquine Tablet Needs</b>			
Total country population	99,383,176	101,967,138	104,618,284
Population at risk for malaria	59,629,906	61,180,283	62,770,970
PMI-targeted at-risk population <sup>1</sup>	59,629,906	61,180,283	62,770,970
Number of <i>P. vivax</i> cases <sup>2</sup>	790,491	790,491	711,442
Total projected number of chloroquine treatment courses needed <sup>3</sup>	790,491	790,491	711,442
<b>Total Chloroquine Treatment Courses Needed <sup>4</sup></b>	<b>909,065</b>	<b>909,065</b>	<b>818,158</b>
<b>Partner Contributions (to PMI target population if not entire area at risk) <sup>1</sup></b>			
Chloroquine treatment courses carried over from previous year	912,500	165,935	0
Chloroquine tablets from Government	0	0	0
Chloroquine tablets from Global Fund	0	0	0
Chloroquine tablets from other donors	0	0	0
Chloroquine treatment courses planned with PMI funding	162,500	743,129	818,158
<b>Total Chloroquine Treatment Courses Available</b>	<b>1,075,000</b>	<b>909,064</b>	<b>818,158</b>
<b>Total Chloroquine Treatment Courses Surplus (Gap)</b>	<b>165,935</b>	<b>(0)</b>	<b>(0)</b>

<sup>1</sup> PMI targeted population at risk: 60% of the population is at risk of malaria.

<sup>2</sup> The estimated number of malaria cases is calculated based on total malaria cases obtained from HMIS 2017 which is 1,755,748. Adjustments to HMIS 2017 data is made as follows. Based on expert opinion, 25% of HMIS cases is added to account for migrant population and refugees not captured by HMIS which is 25% X 1,755,748=438,937. Expected cases by reactive case detection is calculated by assuming 1.2% of tested will be positive (MIS 2015 malaria prevalence by RDT). Estimated number of people to be tested is calculated based on the following assumption. Each health post in 20% of the 239 elimination targeted woredas will conduct reactive case detection for at least one case per week. Therefore, 25 health posts on average in each woreda X 20% X 239 woredas X 5 households X 4.6 people per household X 1.2% positive cases expected X 52 weeks gives 17,151 cases. Based on HMIS, 24.1% of malaria patients go to a private health facility, which is not captured by the routine HMIS, so we added 24.1% x 1,755,748=423,135. The total estimated malaria cases is therefore 2,634,971. 30% of total malaria cases are due to *P. vivax* (30% X 2,634,971=790,491). Reduction of cases is not expected for 2021 due to El Niño, but a 10% reduction is assumed for 2022.

<sup>3</sup> The total number of chloroquine tablets required for a patient is variable based on the weight of the patient. We assumed an average of 8 tablets are required by a single patient as a full course of treatment.

<sup>4</sup> Total chloroquine treatment courses needs is based on estimated cases data including a 15% for buffer and wastage.

<b>Primaquine (PQ) Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Primaquine Need</b>			
Total country population	99,383,176	101,967,138	104,618,284
Population at risk for malaria	59,629,906	61,180,283	62,770,970
PMI-targeted at-risk population <sup>1</sup>	59,629,906	61,180,283	62,770,970
Number of <i>P. falciparum</i> cases <sup>2</sup>	1,844,480	1,844,480	1,660,032
Number of <i>P. vivax</i> cases <sup>2</sup>	790,491	790,491	711,442
Total projected number of 7.5 mg primaquine tablets needed <sup>3</sup>	25,822,708	25,822,708	23,240,437
<b>Total Primaquine Treatment Courses Needs <sup>4</sup></b>	<b>29,696,114</b>	<b>29,696,114</b>	<b>26,726,503</b>
<b>Partner Contributions (to PMI target population if not entire area at risk)</b>			
Primaquine carried over from previous year	0	0	0
Primaquine from Government	0	0	0
Primaquine from Global Fund <sup>5</sup>	29,696,114	29,696,114	0
Primaquine from other donors	0	0	0
Primaquine planned with PMI funding <sup>6</sup>	0	0	0
<b>Total Primaquine Available</b>	<b>29,696,114</b>	<b>29,696,114</b>	<b>0</b>
<b>Total Primaquine Surplus (Gap)</b>	<b>(0)</b>	<b>(0)</b>	<b>(26,726,503)</b>

<sup>1</sup> Population at risk: 60% of the population is at risk for malaria.

<sup>2</sup> Please refer to the ACT and chloroquine gap analysis tables for the assumptions used to calculate the number of *P. falciparum* and *P. vivax* cases.

<sup>3</sup> The total projected number of low dose primaquine tablets (7.5 mg preparation) needed is calculated assuming that all Pf cases will receive two tablets of single dose primaquine and all Pv cases will receive 28 tablets of primaquine.

<sup>4</sup> Total primaquine tablets needed is based on estimated cases data including a 15% for buffer and wastage.

<sup>5</sup> The GF procurement of primaquine for 2022 is unknown at this time

<sup>6</sup> PMI is not planning to procure primaquine since the need is and has been historically covered by the Global Fund.

<b>Injectable Artesunate Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Injectable Artesunate Needs</b>			
Number of malaria cases <sup>1</sup>	1,844,480	1,844,480	1,660,032
Projected number of severe malaria cases <sup>2</sup>	35,471	33,032	24,128
Projected number of severe malaria cases in adults	30,505	28,407	20,750
Projected number of severe malaria cases in children <sup>3</sup>	4,966	4,624	3,378
<b>Total Injectable Artesunate Vials Needed <sup>3</sup></b>	<b>400,004</b>	<b>372,496</b>	<b>272,096</b>
<b>Partner Contributions</b>			
Injectable vials carried over from previous year	182,493	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	200,000	372,496	272,096
<b>Total Injectable Artesunate Vials Available</b>	<b>382,493</b>	<b>372,496</b>	<b>272,096</b>
<b>Total Injectable Artesunate Vials Surplus (Gap)</b>	<b>(17,511)</b>	<b>(0)</b>	<b>0</b>

<sup>1</sup> Please refer to the ACT tab for the assumptions used to calculate the number of *P. falciparum* cases.

<sup>2</sup> 1% of *P. falciparum* cases are assumed to be severe. Assessment findings from routine mentoring and supervision of PMI supported health facilities show 52% of patients that receive injectable artesunate had signs of severe malaria and the rest did not. Adjustment was made for this in 2020, but we expect to reduce irrational use of artesunate in 2021 by 8% and in 2022 by 35%.

<sup>3</sup> Twelve (12) 60 mg artesunate vials are needed to treat one adult patient and three (3) vials are needed to treat children under five years of age. In Ethiopia, children under five years of age only accounted for 12-16% (average 14%) of the total malaria cases. 5% is added for buffer and wastage.

<b>Artesunate Suppository Gap Analysis</b>			
<b>Calendar Year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Artesunate Suppository Needs</b>			
Number of health posts that need minimum stock <sup>1</sup>	12,815	12,815	12,815
<b>Total Artesunate Suppository Needs <sup>2</sup></b>	<b>58,947</b>	<b>58,947</b>	<b>58,947</b>
<b>Partner Contributions</b>			
Artesunate suppositories carried over from previous year	41,305	10,918	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	28,560	48,028	58,947
<b>Total Artesunate Suppositories Available</b>	<b>69,865</b>	<b>58,946</b>	<b>58,947</b>
<b>Total Artesunate Suppositories Surplus (Gap)</b>	<b>10,918</b>	<b>(0)</b>	<b>0</b>

<sup>1</sup> Artesunate suppositories are expected to be available at health posts only. There are 17,086 health posts in the country, 75% of which are in malaria transmission areas (12,815). Each health post will receive 4 suppositories (100-mg) enough for prereferral treatment of 2-4 children with suspected severe malaria.

<sup>2</sup> 15% is added for buffer and wastage.