OFFICE OF INSPECTOR GENERAL

AUDIT OF USAID/MALAWI'S IMPLEMENTATION OF THE PRESIDENT'S MALARIA INITIATIVE

AUDIT REPORT NO. 4-612-12-005-P
JANUARY 25, 2012

PRETORIA, SOUTH AFRICA

January 25, 2012

MEMORANDUM

TO: Mission Director, USAID/Malawi, Douglas Arbuckle

FROM: Acting Regional Inspector General/Pretoria, Robert W. Mason /s/

SUBJECT: Audit of USAID/Malawi's Implementation of the President's Malaria Initiative (Report No. 4-612-12-005-P)

This memorandum transmits our final report on the subject audit. We have considered management's comments on the draft report and have incorporated them as appropriate. Management comments have been included in their entirety in Appendix II.

The report contains three recommendations to strengthen USAID/Malawi's implementation of the President's Malaria Initiative. Based on management's comments on the draft report, management decisions have been reached on all three recommendations, with final action taken on Recommendation 1. Please provide the Office of Audit Performance and Compliance Division with the necessary documentation to achieve final action on Recommendations 2 and 3.

I want to express my sincere appreciation for the cooperation and courtesy extended to my staff during the audit.

U.S. Agency for International Development
100 Totius Street X5, 0181
Pretoria, South Africa
www.usaid.gov/oig

CONTENTS

Summary of Results 1

Audit Findings 4

Indoor Residual Spraying Did Not Achieve Maximum Benefit 4

Health Facilities Ran Out of Insecticide-Treated Nets 6

Outreach Activities Did Not Attain Their Target 9

USAID Has Discontinued Use of Malawi's Central Medical Stores 10

Evaluation of Management Comments 12

Appendix I – Scope and Methodology 13

Appendix II – Management Comments 16

Abbreviations

The following abbreviations appear in this report:

BASICS	Basic Support for Institutionalizing Child Survival
CDC	Centers for Disease Control and Prevention
DHS	Demographic and Health Survey
FY	fiscal year
IRS	indoor residual spraying
ITN	insecticide-treated net
MCHIP	Maternal and Child Health Integrated Program
MSH	Management Sciences for Health
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
PSI	Population Services International
SPS	Strengthening Pharmaceutical Systems Program
WHO	World Health Organization

SUMMARY OF RESULTS

Malaria is the third leading cause of death in Malawi, according to the Centers for Disease Control and Prevention (CDC). In 2010, almost 7 million cases were reported in the country, and 8,206 people died from the disease.[1] The 2010 Demographic and Health Survey (DHS) for Malawi reports that malaria is the main cause of death and poor health for children younger than 5 and pregnant women.[2]

The President's Malaria Initiative (PMI) began in 2005 as a 5-year, $1.2 billion U.S. Government effort to reduce the burden of malaria in 15 African countries, including Malawi. PMI is spearheaded by USAID and implemented with the CDC. The goal is to reduce malaria-related mortality by 50 percent over 5 years in vulnerable groups—children younger than 5, pregnant women, and people living with HIV/AIDS. PMI plans to achieve this goal through four key interventions: artemisinin-based combination therapy (treatment with combination antimalarial drugs), intermittent preventive treatment for malaria in pregnant women, insecticide-treated nets (ITNs) to keep mosquitoes away, and indoor residual spraying (IRS) with insecticides.

USAID/Malawi manages these interventions. From 2007 through February 4, 2011, the mission disbursed $53 million of $75 million obligated for all USAID/Malawi PMI activities. Table 1 details the activities selected for audit.

Table 1. Audited President's Malaria Initiative Activities at USAID/Malawi

Implementing Partner	Program	Amount Budgeted Through 9/30/2011 ($ million)	Dates of Agreement/ Task Order
Chemonics International	The program sprays households in two districts.	4.8	7/2010–7/2015
John Snow Inc.	**DELIVER** procures and distributes combination drugs and procures bed nets, but does not distribute them.	38.7	4/2007–4/2012
Management Sciences for Health/BASICS	The PMI component of the **BASICS** agreement includes (1) community case management, (2) use of antimalarial drugs during pregnancy, and (3) small grants to local organizations to promote malaria treatment.	2.5	10/2007–9/2011
Jhpiego Corporation	Jhpiego implements the **Maternal and Child Health Integrated Program (MCHIP)**, which includes consigning insecticide-treated nets to Population Services International for distribution to health-care service delivery points and facilities.	2.2	1/2010–9/2011

[1] World Health Organization, *World Malaria Report*, 2011.
[2] *Malawi Demographic and Health Survey 2010*, p. 153.

The Regional Inspector General/Pretoria (RIG/Pretoria) conducted this audit to determine whether USAID/Malawi's implementation of PMI was on schedule to achieve its goal of reducing malaria-related deaths by 50 percent, compared with preinitiative levels.

As illustrated in Table 2, an examination of mortality levels across two successive 5-year periods from the 2010 Malawi Demographic and Health Survey (DHS) shows that under-5 mortality rates have declined from 145 deaths per 1,000 live births during the first half of the decade (circa 2000–2005) to 112 deaths per 1,000 live births in the second half of the decade (circa 2005–2010). Therefore, the mortality rate for children under 5 dropped by 22 percent from 2000 to 2010. USAID PMI efforts commenced in 2007, and the first full year of implementation was in fiscal year (FY) 2008. However, given the disparity in times between the reduction in rates and PMI's years of implementation, the audit cannot reasonably infer or conclude that USAID/Malawi's PMI interventions contributed significantly to this decline.[3] To date, PMI/Washington-led evaluations to determine the impact of PMI interventions in reducing malaria deaths are ongoing, and a report is expected in 2012.

Table 2. Under-5 Mortality Rates per 1,000 Live Births in Malawi for Two Successive 5-Year Periods Preceding the Survey*

Year Preceding the Survey	Approximate Period of Estimated Rates	Rates
0-4	2005-2010	112
5-9	2000-2005	145

Source: *Malawi Demographic and Health Survey 2010.*
*Appendix I of this report contains an explanation of the procedures that the auditors performed on this information.

Additionally, USAID PMI officials explained that malaria-specific mortality is difficult to measure accurately in sub-Saharan Africa because of a lack of accurate medical records, vital registration systems, and many children dying at home. As a result, under-5, all-cause child mortality is used to infer what the malaria-specific mortality reduction might be. PMI officials referred to a study by Alexander K. Rowe and Richard W. Steketee[4] that further explained the relationship between reductions in under-5 mortality rates and malaria deaths. The study concluded that under-5 mortality could be reduced by between 12 and 25 percent if malaria interventions succeeded in reducing malaria mortality by 50 percent.

PMI guidance suggests that, by reaching annual targets on output and process indicators for selected activities, the overall goal of reducing malaria-related deaths by 50 percent could be achieved. The audit determined that annual targets on several output indicators were not achieved during the period of the audit scope, threatening the sustainability of health system strengthening efforts in Malawi. Problems included the following:

[3] According to the 2010 DHS, under-5 mortality has been steadily declining since 1992 in Malawi when the rate was 234.
[4] "Predictions of the Impact of Malaria Control Efforts on All-Cause Child Mortality in Sub-Saharan Africa," *American Journal of Tropical Medicine and Hygiene*, 77 (Suppl. 6), 2007, pp. 48–55.

- Indoor residual spraying did not achieve maximum benefit (page 4).

- Health facilities ran out of insecticide-treated nets (ITNs) (page 6).

- Outreach activities did not attain their target (page 9).

- USAID/Malawi's discontinued use of the host-government Central Medical Stores to safeguard U.S. Government assets and intended beneficiaries poses challenges to ensuring the ongoing sustainability of health system strengthening efforts in Malawi (page 10).

Also, during the course of the audit, allegations arose that workers were intentionally using less than the required amount of insecticide for spraying houses and selling the excess. These allegations were reported to Office of Inspector General investigators.

To strengthen USAID/Malawi's implementation of its PMI activities, the audit recommends that the mission:

1. Develop and implement a plan, which would include adding a vector control specialist to its staff if necessary, to maximize the benefits derived from IRS interventions in Malawi (page 5).

2. Develop and implement a plan with milestones to engage the Malawi Ministry of Health in monitoring the needs of health facilities for insecticide-treated nets and fulfilling those needs expeditiously (page 8).

3. Develop and implement a plan with benchmarks to track improvements by the Malawi Central Medical Stores and determine the threshold of improvements necessary for USAID to resume using Central Medical Stores for distributing USAID-procured commodities (page 11).

Detailed findings appear in the following section. The audit's scope and methodology are described in Appendix I. Our evaluation of management comments is on page 12, and full text of the comments is included in Appendix II.

AUDIT FINDINGS

Indoor Residual Spraying Did Not Achieve Maximum Benefit

According to a 2006 position statement by the World Health Organization (WHO), spraying protects communities from malaria, and the highest possible level of coverage is required to achieve the maximum impact on malaria transmission. Achieving a high level of coverage and correctly timing the spraying (in a short period before the onset of the transmission season) are crucial to realizing the full potential of IRS.

According to WHO's 2001 Communicable Disease Control Prevention and Eradication Pesticide Evaluation Scheme:

> Spraying should be repeated at regular intervals in order to achieve effective control over the required period. Each spraying of all sprayable houses in an area over a period of time is called a "spray round." The repetition of spraying operations at regular intervals is called the "spraying cycle." It is normally expressed in terms of the interval between repetitions, e.g., in a six-month cycle, spraying is repeated every six months. The spraying cycle should be determined in accordance with the duration of residual effect and the duration of the transmission season. The timing of spraying is most critical when it is necessary to protect an area during a transmission season with a single round of spraying. The whole round should be completed before the beginning of transmission, but the residual effect on the first houses sprayed should not be lost before the end of the season.

Two issues occurred during the FY 2011 spraying season (November-December 2010). The first is that the annual targeted number of structures to be sprayed was not achieved. The second is that the residual effect of the selected insecticide did not last through the peak malaria transmission season. Both issues resulted from malaria-transmitting mosquitoes developing resistance to the insecticide that had been in use for IRS.

- **Target was not achieved.** USAID/Malawi's IRS activities did not meet the annual target during the FY 2011 spraying season. The number of structures sprayed was 97,000 or 72 percent of the 134,000 targeted structures in Nkhotakota and Salima districts. This occurred because the amount of supplies the implementing partner, Chemonics, planned to use had to be modified prior to commencement of the activity. In August 2010 the mission discovered that *Anopheles funestus* (the mosquito vector)[5] had developed resistance to the pyrethroid insecticide that had been in use because of repeated and continued exposure. Chemonics had planned to purchase 47,000 satchels of the insecticide. However, the appropriate insecticide came in liters. Mission officials stated that changes in the insecticide quantification should have been reviewed by a vector control specialist, but were not because the mission does not have one on staff. Without a specialist, officials said they had no way of knowing what the proper quantities of the new insecticide should have been.

[5] A vector is an insect, such as a mosquito, or other organism that transmits a pathogenic fungus, virus, or bacterium.

- **Residual effect of insecticide was not sufficient to last through the peak malaria transmission season.** The residual effect of the new insecticide, Actellic 50 EC, was not long enough to cover the peak malaria transmission season in Malawi (December–April); the effect lasts only 2 to 3 months. Thus, even for those structures that were sprayed, the residual effect of the chemical was significantly reduced by the end of February 2011, according to an analysis performed by the Malaria Alert Center, an affiliate of the University of Malawi contracted by CDC. Anecdotal evidence from beneficiary interviews, collected during auditor site visits, corroborated the conclusions in the analysis.

As stated above, *Anopheles funestus* was showing evidence of emerging resistance to the insecticide that Chemonics had planned to use. In August 2010, the Malaria Alert Center informed the CDC and USAID/Malawi that the pyrethroid insecticide that had been in use was no longer effective. The mission had to select an alternative insecticide. The choice involved a variety of factors, including the following:

1. The cost of the chemicals, including the costs of equipment necessary for spraying.

2. The number of months the residual effect would cover.

3. The effectiveness of the chemical in killing the *Anopheles funestus* mosquitoes, including the risks involved in developing resistance to that insecticide.

4. The environmental effects, including health-related side effects on spray operators.

5. The relative ease with which spray operators can be trained.

The mission selected an insecticide from the organophosphate class (rather than from the pyrethroid class) with the trade name Actellic 50 EC. Mission officials believed it was the best alternative based on the factors described above. The disadvantage of the selected chemical was that it had a residual effect of approximately 2 to 3 months, which was not enough to last through the peak malaria transmission season. Mission officials were aware that the chemical would not last through this period, but opted to proceed, believing that it was the best option available.

The indoor residual spraying activity did not maximize the benefits that could have been derived had insecticide resistance not been a factor. The change in plans not only prevented the target number of structures from being reached, but it also led to use of an insecticide that did not have the residual effect needed to last through the peak malaria transmission season. In turn, the reduced IRS benefits may thwart the mission's goal of reducing malaria-related deaths (although the relative impact of this intervention on overall PMI goals is not documented). Further, the risks of IRS include thefts (such as overdiluted chemicals and selling the excess, as detailed in the Summary of Results section), development of resistance in mosquitoes, adverse environmental consequences, and limited coverage resulting from short-term residual effects. In contrast, ITNs seem to carry relatively fewer risks (although, unlike IRS, they do require behavior changes in beneficiaries in order to be effective). To mitigate these risks and achieve reductions in malaria-related deaths, the audit makes the following recommendation.

> ***Recommendation 1.*** *We recommend that USAID/Malawi develop and implement a plan, which would include adding a vector control specialist to its staff if necessary, to maximize the benefits derived from indoor residual spraying interventions in Malawi.*

Health Facilities Ran Out of Insecticide-Treated Nets

ITNs, properly used, have been demonstrated to reduce the burden of malaria by repelling or killing mosquitoes that come in contact with insecticide embedded in the net. A WHO Global Malaria Program ITN position statement noted that a recent study[6] showed that when full coverage is achieved, ITNs reduce all-cause child mortality by an average of 18 percent in sub-Saharan Africa. In addition, WHO pointed out that when ITNs are used by the majority of the targeted population, the effects of reducing the vector population—mosquitoes—protect even those who do not use nets. Thus, providing maximum ITN coverage of the targeted population is necessary to achieve the most benefits from ITN interventions.

To achieve the most benefit, ITNs need to be properly distributed. The National Malaria Control Program (NMCP), a unit of the Malawi Ministry of Health, calls for universal coverage of the population with ITNs, with coverage defined as one net per two people. According to the PMI Malaria Operational Plan for Malawi for FY 2010, distribution of ITNs is administered through routine distribution of long-lasting ITNs to clinics and periodic mass campaigns. This audit focused on the routine distribution of ITNs to health facilities by Population Services International (PSI) under the MCHIP. PSI is one of two organizations that distribute ITNs to health facilities in Malawi; the other is Mulli Brothers, a Malawian firm with funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund).

NMCP dictates all ITN distribution quantities and schedules for all partners nationally. It is responsible for developing distribution plans to dispense ITNs to health facilities using a ―pull" system, in which the customer ―pulls" the product as needed. For a pull system to operate efficiently, health facilities would order ITNs as needed, and the NMCP distribution plan for ITNs would reflect the needs at health facilities. According to logistics guidance published by USAID, a pull system ―can be based on current information about actual needs, and thus, in theory, is more accurate and less wasteful than an allocation system." The guidance further states that a pull system can work only if accurate information about needs can be obtained. Thus, related to ITN distribution, a pull system would be effective only if NMCP had timely information on the ITN needs at the 640 health facilities in Malawi and prepared distribution plans that reflected those needs.

Auditors found that NMCP did not have timely information about the ITN needs at health facilities, and as a result, some facilities ran out of ITNs. Auditors visited six health facilities in Malawi and found that three had no ITNs. Table 3 shows the findings of the site visits.

[6] C. Lengeler, ―Insecticide-treated bednets and curtains for preventing malaria," *Cochrane Database of Systematic Reviews,* Issue 2, 2004.

Table 3. Net Stocks Observed During Site Visits

Location	Date	Nets in Stock?
Salima Village Health Center	March 16, 2011	Yes
Salima District Hospital	March 16, 2011	No
Kamuzu Central Hospital	March 17, 2011	Yes
Bwaila Maternity Ward	March 18, 2011	No
St. Gabriel Hospital	March 21, 2011	No
Nkhoma Hospital	March 22, 2011	Yes

At Kamuzu Central Hospital in Lilongwe, nets on hand totaled 714 according to the stock cards. Of these, 500 ITNs had been recently delivered although the facility never requested them. Staff from the hospital informed the auditors that this facility did not have problems with stock-outs, so it was unclear why the facility had received them. Meanwhile, neither Bwaila Maternity Ward (pictured below) nor St. Gabriel Hospital in Lilongwe had nets.

In addition to the auditors' observations, multiple reports have documented problems with ITN stock-outs in Malawi. A November 2008 report, prepared by USAID's Strengthening Pharmaceutical Systems Program (SPS), found that 61 percent of 44 health facilities visited had experienced stock-outs of ITNs for at least 1 week within the past 3 months. The mission noted that a March 2010 report prepared by SPS found improvements over the prior report, yet 14 percent of health facilities visited (8 out of 56) had experienced stock-outs on the day of SPS' visit. The same report also noted that 70 percent of the facilities visited (39 out of 56) reported a stock-out of nets between December 2009 and February 2010. Further, in a December 2010 meeting of PMI partners, PSI and NMCP reported that spot checks at 16 health facilities revealed that 10 facilities did not have enough nets in stock.

Some 12,000 insecticide-treated nets sit in PSI's Lilongwe warehouse (left), while only a few miles away no nets are available at the Bwaila Maternity Ward (right). (Photos by RIG/Pretoria, March 2011)

Stock-outs did not reflect a lack of bed nets in Malawi. Auditors visited PSI warehouses in Blantyre and Lilongwe, and found approximately 423,000 nets. Furthermore, although the mission stated in its annual report that it had purchased 1.1 million nets during FY 2010, PMI actually received 320,000 nets by the end of that fiscal year; the balance of approximately 780,000 reportedly arrived after the end of the fiscal year, in November 2010. Only 234,000 nets were distributed to health-care facilities and service delivery points by the end of FY 2010. This occurred because NMCP prioritized distribution of Global Fund-procured nets over those from PMI.

The primary cause of the ITN stock-outs is that NMCP is not able to develop timely distribution plans that reflect the facilities' needs. According to USAID, individual health facilities report their ITN needs monthly to their respective districts, and the districts then relay the needs to NMCP. NMCP uses this information to develop the distribution plans that it gives to PSI and Mulli Brothers. Yet a considerable lag exists between the facilities reporting to districts and NMCP issuing its ITN distribution plan. One nurse at a health facility visited by auditors commented that it would be helpful if facilities could order ITNs as needed.

As a result of the lag in developing the distribution plan, accurate and timely information on ITN needs is not in place for a pull system to be effective. PSI has advocated for a ―push" or allocation system, which would allow PSI to visit health facilities and allocate ITNs as needed, but NMCP has resisted this change, because of lack of storage capacity at health facilities. To address this issue, PSI is working to develop a Web-based system to track net stocks at health facilities. This system was in the beginning stages of development during audit fieldwork.

The effect of not distributing ITNs efficiently to health facilities in Malawi is that stock-outs of ITNs could result in patients being denied access to this proven malaria prevention intervention. Further, PMI did not reach its annual target of 1 million nets distributed for FY 2010, having distributed only 234,000. It also is not on track to meet its 5-year target for ITN ownership (although this does not rely on PMI alone; multiple international donors including the Global Fund contribute to malaria targets). Specifically, the FY 2010 Malaria Operational Plan for Malawi contained the following target: more than 90 percent of households with children under 5, a pregnant woman, or both will own at least one ITN. The mission stated during audit fieldwork that plans to increase ITN ownership significantly are in place through the 2011 ITN Universal Coverage campaign, supported by multiple donors.

Results from the 2010 DHS for Malawi showed that after 3 years of full implementation, about 57 percent of households had at least one ITN;[7] this result is 63 percent of the PMI target. Auditors believe that challenges with distributing ITNs may interfere with USAID/Malawi's ability to achieve the target by the end of the 5 years. Therefore, to address the challenges with ITN stock-outs at health facilities in Malawi, the audit makes the following recommendation.

> ***Recommendation 2.*** *We recommend that USAID/Malawi develop and implement a plan with milestones to engage the Malawi Ministry of Health in monitoring the needs of health facilities for insecticide-treated nets and fulfilling those needs expeditiously.*

[7] Preliminary DHS data is not disaggregated by households with children under 5 and pregnant women who own at least one ITN.

Outreach Activities Did Not Attain Their Target

For FY 2010, USAID/Malawi's Basic Support for Institutionalizing Child Survival (BASICS) project did not achieve its target (according to the mission's 2010 Annual Performance Plan and Report) of reaching 5.4 million people through community outreach activities that promote the treatment of malaria in conformity with national guidelines. The reported number reached was 3.9 million people or 72 percent of the target. The objective of the malaria component of the project[8] is to increase the number of people (caretakers of pregnant women and children under 5 reached with messages on the need for correct, consistent use of ITNs and for promptly recognizing and seeking care for malaria. The project awards small grants to local organizations to disseminate these messages.

BASICS missed its target because of unexpected project delays during the transfer of the BASICS project to Management Sciences for Health (MSH). MSH had been one of the subpartners under the previous global BASICS project implemented by the Partnership for Child Health Care Inc., which ended in September 2009. During the reorganization, MSH opted not to issue new subgrants between August 1, 2009, and May 7, 2010, while it resolved contractual issues related to converting the consortium's former employees into MSH employees.

Delays were exacerbated by an apparent misunderstanding between USAID/Malawi health officials and USAID contracting officers located at USAID/Southern Africa. USAID/Malawi's senior malaria adviser informed the auditors that the contracting officers' reorganization of the contracts delayed the issuing of new grants during this period. The contracting officers in South Africa disputed this, claiming that their reorganizing efforts should not have delayed the process.

Because achieving annual output targets is critical to achieving the overall PMI goal, the underachievement in outreach may hinder PMI's goal of reducing malaria-related deaths by 50 percent. Correct and consistent net usage, for example, is one of the outreach messages conveyed. Specifically, the FY 2010 Malaria Operational Plan for Malawi contained the following five-year targets related to ITN usage:

- 85 percent of children under 5 will have slept under an ITN the previous night.
- 85 percent of pregnant women will have slept under an ITN the previous night.

The DHS found that, of those in the target population who owned an ITN, only 40 percent of children under 5 and 35 percent of pregnant women had slept under an ITN the night before the survey. The 2010 Malawi National Malaria Indicator Survey showed that 55 percent of children under 5 and 49 percent of pregnant women slept under ITNs the previous night. Both surveys indicate that ITN usage in Malawi is below the 85 percent target, and further malaria outreach is needed.

However, as stated above, new grants commenced May 7, 2010. In addition, seven grants totaling $650,000 reportedly have been issued since then. Because the implementation delays have been rectified and new grants were being issued at the time of the audit, we are not making a recommendation regarding outreach activities.

[8] The BASICS project involves child survival activities, not all of which are related to PMI.

USAID Has Discontinued Use of Malawi's Central Medical Stores

The first three of USAID's nine principles of development and reconstruction assistance are ownership, capacity building, and sustainability. Ownership involves building leadership, participation, and commitment of a country and its people. Capacity building involves strengthening local institutions, transferring technical skills, and promoting appropriate policies. Sustainability involves designing programs to ensure that their impact endures, though as stewards of USAID-procured commodities, the mission has an obligation to protect the U.S. Government's investment.

According to a 2005 article by a former USAID Administrator,[9]

> Ownership, capacity building, and sustainability form an iron triad of principles underscoring all successful and enduring development and reconstruction projects. These principles cannot be applied successfully over short time periods. They require years of consistent effort and support or they will fail.

In line with these principles, USAID/Malawi has provided logistics support for the nation's health commodities since 1988, using Central Medical Stores to distribute commodities such as family planning commodities and antimalarial drugs. Further, John Snow Inc., a PMI partner, is required under its DELIVER contract to strengthen in-country supply systems and capacity for effective management of malaria commodities. The contract tasks specifically mention sustainability and capacity building.

In 2007, PMI began using Central Medical Stores to distribute malaria commodities, on condition that Central Medical Stores ensured commodity security and tracking. Under this system, John Snow Inc. procured PMI drugs and passed them on to the stores to fill orders from district health facilities. Central Medical Stores then distributed PMI drugs to Regional Medical Stores, which in turn delivered the commodities to health facilities. PMI continued to use Central Medical Stores to distribute PMI commodities until September 2010, when USAID/Malawi became aware that antimalarial drugs with batch numbers from shipments originally sent to Malawi were being sold in markets in other countries. Shortly afterward, USAID/Malawi became aware of additional thefts of USAID and Global Fund-funded artemisinin-based combination therapies.

Because of these discoveries and to ensure that PMI-procured antimalarial drugs reached their intended recipients, in October 2010 USAID and the Global Fund discontinued use of Central Medical Stores to distribute PMI and other USAID-procured commodities. USAID and the Global Fund then established a parallel distribution system under the USAID/DELIVER contract until commodity security could be ensured at Central Medical Stores. Under this system, Cargo Management Logistics, a third-party logistics service, distributes PMI drugs, along with other USAID-funded commodities and Global Fund drugs, to health facilities.

The weaknesses in the Central Medical Stores distribution system may have contributed to missing the target related to use of combination antimalarial drugs. The 2010 DHS determined that, among children under 5 who had fevers in the 2 weeks preceding the survey, 23.9 percent

[9] Andrew S. Natsios, "The Nine Principles of Reconstruction and Development," *Parameters*, Autumn 2005.

took these drugs the same day or the next—significantly less than the 5-year target of 85 percent after 3 years of implementation. Mission officials stated that the target needs to be revised, and PMI is awaiting guidance from USAID/Washington.

USAID officials stated that they followed previous Inspector General and Government Accountability Office guidance to ensure that U.S. Government-financed assets are safeguarded. While the audit found this decision to be prudent, it posed challenges to ensuring the sustainability of health system strengthening efforts in Malawi. Although USAID intends to monitor improvements by Central Medical Stores and explore other sustainable options, the mission has not said when it would resume working with the stores. Consequently, this audit makes the following recommendation.

> ***Recommendation 3.*** *We recommend that USAID/Malawi develop and implement a plan with benchmarks to track improvements by the Malawi Central Medical Stores and determine the threshold of improvements necessary for USAID to resume using Central Medical Stores for distributing USAID-procured commodities.*

EVALUATION OF MANAGEMENT COMMENTS

In its comments on the draft report, USAID/Malawi agreed with Recommendations 2 and 3, and agreed with the intent of Recommendation 1. Management decisions have been reached on all recommendations, with final action taken on Recommendation 1. A detailed evaluation of management comments follows.

Recommendation 1. USAID/Malawi substantially agreed with the recommendation to develop and implement a plan, which would include adding a vector control specialist if necessary, to maximize the benefits derived from IRS interventions. The mission noted that a vector control specialist was not necessary, given existing budget constraints, because a pool of entomologists from CDC and USAID/Washington are available to provide IRS technical guidance. The mission noted that Chemonics has mapped structures that could be sprayed to facilitate estimating insecticide quantities.

The mission provided an excerpt of its FY 2012 Malawi IRS Work Plan, which details a revised IRS timeline to ensure the timely implementation of activities. Further, the mission noted that USAID staff provided technical assistance to the IRS contractor during planning and implementation of the FY 2012 spray campaign (November-December 2011). The actions taken by USAID/Malawi meet the intent of the recommendation to develop and implement a plan to maximize the benefits of indoor residual spraying interventions. On the basis of the mission's comments and supporting documentation provided, we consider that a management decision has been reached and final action taken on Recommendation 1.

Recommendation 2. USAID/Malawi agreed with the recommendation to develop and implement a plan with milestones to engage the Malawi Ministry of Health in monitoring the needs of health facilities for ITNs and fulfilling those needs expeditiously. To this end, PSI has engaged NMCP to develop a biannual net distribution plan to provide a guide for the number of nets to be distributed to facilities. According to the mission, the net distribution plan for September 2011 through April 2012 has been approved by NMCP. In addition, the mission noted that PSI will develop an online database to track and verify net delivery and stock at health facilities. This is expected to be completed by February 29, 2012. The actions taken by USAID/Malawi meet the intent of the recommendation to engage with the Ministry of Health in monitoring the needs of health facilities for ITNs. As a result, a management decision has been reached on Recommendation 2.

Recommendation 3. USAID/Malawi agreed with the recommendation to develop and implement a plan with benchmarks to track improvements by Malawi Central Medical Stores and determine the threshold of improvements necessary for USAID to resume using the stores for distributing USAID-procured commodities. As part of this effort, the mission noted that it and other donor partners have established a supply chain adviser position that will provide technical assistance to the Government of Malawi for 2 years. In addition, an assessment of supply chain weaknesses is expected to be completed by September 30, 2012. It will provide a baseline and benchmarks for achieving meaningful reforms. As a result, a management decision has been reached on Recommendation 3.

SCOPE AND METHODOLOGY

Scope

The Regional Inspector General/Pretoria conducted this performance audit in accordance with generally accepted government auditing standards.[10] Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions in accordance with our audit objective. We believe that the evidence obtained provides that reasonable basis. The purpose of this audit was to determine whether USAID/Malawi's PMI activities were on schedule to achieve the goal of reducing malaria-related deaths by 50 percent compared with pre-initiative levels.

The scope of the audit covered PMI results for activities starting with the fiscal year beginning October 1, 2009, including the procurement and distribution of ITNs and antimalarial drugs, and the IRS spray round conducted from November through December 2010. The audit team performed this audit at USAID/Malawi; at the USAID/Regional Contracting Office in Pretoria, South Africa; at partner offices of MSH, PSI, JSI and Chemonics; the offices of the National Malaria Control Program, the Malaria Alert Center in Malawi; and at health facilities in Salima and Lilongwe districts of Malawi. Audit fieldwork was conducted from March 7 to March 24, 2011.

In planning and performing the audit, the team assessed management controls related to USAID/Malawi's program reporting processes, as well as controls over data quality, that were significant within the context of the audit objective. Data quality assessments are one form of these controls. We assessed the quality of data quality assessments that mission officials did of various PMI implementing partners, such as that of PSI, which members of the mission's monitoring and evaluation team conducted on November 5, 2007. We also assessed the quality of the data quality assessment of MSH's BASICS project that mission officials conducted on October 7, 2009. Further, we assessed internal controls over the mission's reporting procedures of its PMI implementing partner activities and similar types, as well as performance information from partners involved in various PMI activities. Additionally, we assessed the quality of the mission's and implementing partners' monitoring of operations as an internal control mechanism. To this end, we obtained the monitoring reports prepared by PMI implementing partners.

As of February 4, 2011, USAID/Malawi reported obligations and disbursements of $75 million and $53 million, respectively, for all PMI activities since inception in 2007. The total amount of PMI funding requested for Malawi in FY 2010 was $27 million. Of this amount, 45 percent was budgeted for purchasing and distributing commodities. For this reason, the audit focused on activities that purchased and distributed commodities; however, we did not determine specific amounts spent on purchasing and distributing commodities since they were not applicable to the audit objective. The selected activities audited were IRS, distribution of combination antimalarial drugs, and ITN distribution. We also examined outreach activities as these pertained to commodity usage. Kinds and sources of evidence used included third-party reports such as the 2010 Malawi Demographic and Health Survey and our analysis thereof; mission reports such as USAID/Malawi's full performance plan and report for the fiscal year ended

[10] *Government Auditing Standards*, July 2007 Revision (GAO-07-731G).

September 30, 2010; and reports prepared by USAID/Malawi's PMI implementing partners. The technique used to verify evidence consisted of analytical procedures, interviews with appropriate officials at the mission and with partners, and tracing reported information to source documentation.

Methodology

To determine whether the activities were achieving their main goal, the audit team reviewed the results of the 2010 Malawi DHS. Our review consisted of data analysis and inquiries to individuals who prepared the survey. During our review, nothing came to our attention to indicate that the reported figures of 112 and 145 under-5 deaths per 1,000 live births during the successive 5-year periods 2005–2010 and 2000–2005, respectively, were not fairly stated. While the trend over the decade 2000–2010 is positive, we were unable to attribute the trend to USAID/Malawi's PMI interventions because the first year of full implementation was FY 2008.

We also interviewed key USAID/Malawi personnel, implementing partner and subpartner staff, and employees at health-care service delivery points.

We judgmentally selected activities to test the implementing partners' reported performance results. We judgmentally selected sites and sample sizes based on our risk analyses, as well as on time, resource, and geographic constraints.

For spraying, we vouched approximately 46,000 or 47 percent of the 97,000 structures the contractor reportedly sprayed in November and December 2010 (work that falls in the FY 2011 reporting year) by examining the contractor's supporting schedules. We also visited Salima District, where those structures were sprayed.

For combination antimalarial drugs, we used supporting documentation to vouch 100 percent of the 2.5 million treatments, valued at about $2.7 million, that the mission reportedly purchased during FY 2010. We also traced a judgmental sample of distributions from the December 2010 emergency procurement to health-care facilities under the newly created distribution system implemented by John Snow Inc. Our sample of 403 packages was approximately 5 percent of the December 2010 emergency procurement.

For bed nets, we used the contractor's supporting schedules to vouch 100 percent of the 234,000 nets reportedly delivered to health-care facilities during FY 2010. We also used supporting documentation to trace delivery of a sample of 5,800 nets, or 2 percent, distributed to the facilities.

We visited six health-care facilities in Malawi. Four were located in Lilongwe District. We selected facilities there because they received 30 percent of the combination antimalarial drugs reportedly distributed in the emergency distribution in December 2010, the highest percentage of such drugs received by a single district. The other two health-care facilities we visited were located in Salima District. It received 6 percent of the drugs reportedly distributed in the emergency distribution in December 2010. We chose these facilities because spraying also took place in the district, and we believed that visiting it would be the most efficient use of audit resources. All six facilities also received bed nets, allowing us to test that PMI activity with maximum efficiency.

Results of tests from judgmental samples cannot be projected to the intended population. However, these tests did not form the basis for answering the audit objective.

We also reviewed the agreements, subagreements, progress reports, and supplementary documents of the contractors that reported results on the tested outputs. In addition, we reviewed applicable laws, regulations, and USAID policies and procedures pertaining to USAID/Malawi's PMI activities, including USAID's Automated Directives System Chapters 200–204; WHO position statements; and *Concepts of Systems Logistics Design* published by USAID.

MANAGEMENT COMMENTS

To: Regional Inspector General/Pretoria, Christine M. Byrne

From: Acting Mission Director USAID/Malawi, Mikaela Meredith /s/

Date: December 12, 2011

Subject: Management Comments on the Draft Audit Report of USAID/Malawi's Implementation of the President's Malaria Initiative

This memorandum transmits USAID/Malawi's management comments to the subject draft audit report titled "Audit of USAID Malawi's Implementation of the President's Malaria Initiative (Report Number 4-612-11-XXX-P).

Thank you for sharing the draft report and providing us with the opportunity to offer clarifications and our response. We view audits as an opportunity to both learn and improve USAID malaria programming.

MANAGEMENT COMMENTS

Indoor Residual Spraying Did Not Achieve Maximum Benefit

Recommendation 1. *We recommend that USAID/Malawi develop and implement a plan, which would include adding a vector control specialist to its staff if necessary, to maximize the benefits derived from indoor residual spraying interventions in Malawi.*

USAID/Malawi comments:
While the mission appreciates the logic behind the recommendation to add a vector control specialist to its staff, we do not agree with the recommendation for additional staff primarily given the current budget constraints. We do appreciate your mention that this may not be a necessity. PMI Malawi currently taps into a pool of USAID Washington and CDC entomologists who provide technical guidance on IRS issues. Finally, there were other factors that played a role in the mis-quantification of insecticide and a vector control specialist alone would not have alleviated these issues. Corrective action was immediately undertaken by the mission and included a robust supervision plan and specific deliverables to enhance the contractor's performance. For example, with support from the University of Malawi, Chemonics has since conducted GIS mapping to accurately reflect the spray-able structures in the IRS spray district and allow for better quantification.

In order to ensure a successful IRS campaign in FY11, PMI Malawi worked with the IRS contractor to revise the IRS campaign timeline to ensure timely implementation of activities. PMI Malawi also closely worked with USAID and CDC entomologists to plan and implement the FY11 spray campaign and to ensure monitoring through a combination of PMI/Malawi and Washington staff. Short term technical assistance by USAID staff has been provided to the IRS contractor during planning and implementation of the spray campaign for FY11. These efforts have so far resulted in a successful spray round in FY11. Please see attached document titled "Malawi IRS FY2011 Work Plan" which includes an excerpt of our IRS implementing partner's work plan outlining key milestones, expected outcomes and associated timeframe for activities.

Finally, please note that the 2010 decision not to spray with DDT was not only due to the need to "obtain time-consuming waivers given the possible adverse environmental consequences," but also the fact that DDT is banned in Malawi due to the importance of agricultural commodities such as tobacco to the Malawian economy.

Health Facility Stock-outs of Insecticide-Treated Nets Were Noted

Recommendation 2. *We recommend that USAID/Malawi develop and implement a plan, with milestones, to engage the Malawi Ministry of Health in monitoring the needs of health facilities for insecticide-treated nets and fulfilling those needs expeditiously.*

USAID/Malawi comments:
1) The Mission agrees with the above recommendation. PMI/Malawi through its Long Lasting Insecticide-Treated Net (LLIN) distribution contractor Population Service International (PSI) has engaged the National Malaria Control Program to develop a biannual net distribution plan, which provides a guide for the number of nets that need to be distributed in the facilities. The plan is used as a reference point for district needs and is reviewed frequently in order to adjust net requirements as necessary. Please see attached document entitled "LLIN Distribution Plan 09/11 thru 04/12" which was submitted to the mission by PSI and has been approved by the National Malaria Control Program (NMCP). This outlines the first phase of the distribution of LLINs. The May 2012 to December 2012 LLIN distribution plan will be completed by the end of the 1st quarter 2012 with pending approval from Malawi's NMCP.

Through PSI, PMI/Malawi will develop an online database, accessible to all stakeholders that will enhance existing management information systems (MIS) capability by more accurately tracking and verifying LLIN delivery and stock status at the facility levels. This will ensure timely fulfillment of nets in the health facilities.

2) The auditors state (p.10) that: "The DHS found that, of those in the target population who owned ITN, only 40 percent of children under 5 and 35 percent of pregnant women had slept under an ITN the night before the survey. Given that 3 years of a 5-year period have been completed, one would like to see at least 51 percent (3/5 times 85 percent) of children and pregnant women sleeping under an ITN (although progress is not necessarily linear)." However, while the DHS documented lower rates, the MIS (Malaria Indicator Survey, which fields during the peak transmission season) documented use rates of 56% (under 5) and 50% (pregnant women). It is recognized that net usage is higher during the rainy season than in the dry season, when the DHS activities took place.

USAID Has Discontinued Use of Host Nation Central Medical Stores

Recommendation 3. *We recommend that USAID/Malawi develop and implement a plan, with benchmarks, to track improvements by the Malawi Central Medical Stores and determine the threshold of improvements necessary for USAID to resume using Central Medical Stores for distributing USAID-procured commodities.*

USAID/Malawi comments:
USAID Malawi agrees with the recommendation. While an important recommendation, it must be considered in the larger scope of health commodity security for Malawi. In an effort to continue strengthening the Malawi Central Medical Stores (CMS), USAID Malawi in concert with other multilateral and bilateral partners such as DFID have established a position for a Supply Chain Advisor to be based at USAID/Malawi. This advisor will provide technical assistance to the Ministry on supply chain issues. PMI/Malawi will also support two Supply Chain Advisors to be based at the Ministry to strengthen the Malawi Government supply chain for two years. USAID/Malawi is a significant partner in a larger stakeholder group on CMS reform for Malawi that is overseeing Malawi's plans to develop a trust for CMS that would privatize certain activities in an effort to create greater efficiencies in the functioning of CMS.

PMI Malawi through USAID Washington will support an independent internal controls assessment in 2012 to assess specific areas of weakness in the country's supply systems. This will be a baseline assessment and the aim is for results of this assessment to mark the roadmap towards significant and lasting supply chain sector reforms. While the mission anticipates that this assessment will be completed by the end of FY2012, financial inputs for this activity as well as planning for its implementation is being coordinated at the central level. A follow up assessment is planned for 2013 and results will be used to determine whether to resume using CMS for the supply of USG commodities.

U.S. Agency for International Development
Office of Inspector General
1300 Pennsylvania Avenue, NW
Washington, DC 20523
Tel: 202-712-1150
Fax: 202-216-3047
www.usaid.gov/oig