President's Malaria Initiative

MONITORING & EVALUATION AND OPERATIONAL RESEARCH

BACKGROUND

Ethiopian healthcare workers evaluate an estimated 20 million patients with acute febrile illnesses that could represent malaria infections, resulting in the consumption of about 12 million doses of antimalarial medications each year. Until recently, fewer than 20% of malaria infections we confirmed by laboratory methods, and fewer than 10% of children with fevers had access to effective anti-malarial medications. Since 2008 The President's Malaria Initiative (PMI) [http://www.pmi.gov] has supported: (i) case management at rural community levels to improve prompt diagnosis and treatment using microscopy and multi-species rapid diagnostic tests (RDTs), artemisinine combination therapies (ACTs) and chloroquine; (ii) vector control measures with long-lasting insecticidal bed nets (LLINs) and indoor residual spraying (IRS); (iii) epidemic surveillance and detection as well as monitoring and evaluation activities; (iv) strategic operational research; and (v) activities to strengthen health systems and provide program integration following the principles of the U.S. Government's Global Health Initiative (GHI).

PMI Support for Malaria Prevention and Control

- Annual budget of $20 – 40.9 million.
- Prevention and control through indoor residual spraying of households with insecticide and insecticide-treated nets.
- Prompt and effective case management through confirmatory diagnosis and treatment with artemisinin combination therapy.
- Health education of population at risk regards disease diagnosis, treatment and prevention, and vector control.
- Monitoring and evaluation of program activities to ensure program quality, impact, and sustainability.
- Coordination of in-country malaria stakeholders.

PMI RESPONSE and RESULTS

PMI/E has supported or plans to support important assessment projects to: (i) the household coverage, access and use to malaria interventions; (ii) determine diagnostic performance of several types of RDTs to inform case management and laboratory supply procurements; (iii) determine clinical effectiveness and *in vivo* drug resistance of ACT and chloroquine medications for *Plasmodium falciparum* and *P. vivax* infections; (iv) determine effectiveness of insecticides for killing mosquitoes in Ethiopia; (v) assess baseline coverage with LLIN's and assist with a bed net hang-up keep up project; (vi) develop malaria risk-mapping to determine whether school-based survey techniques could offer advantages over more expensive methods of malaria control program assessment; (vii) conduct health facility surveys at community and hospital levels to understand malaria epidemiology and case reporting processes and the dynamics of outbreak detection and response; (viii) determine factors related to adherence to antimalarial medications; (ix) assess and strengthen drug management systems and malaria commodity supply chains; (x) support drug quality monitoring; (xi) strengthen quality of diagnosis (microscopy and RDTs); (xii) improve training and education capacities; and (xiii) optimize social behaviour change communication, including assessing preferences for LLIN type within households.

Thus, some of the PMI-supported operational research has already led to important changes in the country's strategic and policy framework for malaria prevention and control. The Malaria Indicator Survey in 2007 showed that nationwide coverage of the main malaria interventions has increased dramatically since 2005, with, for example, household LLIN coverage increasing from <5% in 2005 to 66% in 2007. Several brands of multi-species RDTs were shown to perform well in malaria diagnosis in Ethiopia, which provided the needed evidence for the Federal Ministry of Health (FMOH) to switch from single-species to multi-species RDTs for malaria case management. These multi-species RDT have already resulted in better malaria case management practices at health facility-level, including allowing for improved differential diagnosis and resulting and cost savings because of reduced prescription of anti-malarial drugs. Similarly, widespread DDT resistance and emerging deltamethrin resistance was detected in PMI-supported insecticide resistanc emonitoring work, leading the FMOH to ban DDT, and restrict the use of deltamethrine insecticides for IRS operations in Ethiopia. Anti-malarial drug resistance monitoring work has shown the contrinued high efficacy of both ACTs for *P. falciparum* and chloroquine for *P. vivax*, informing the development of national malaria treatment guidelines. Finally, PMI is supporting extensive monitoring and evaluation of implemented activities in order to document the activities' impact on malaria trends and to influence national malaria prevention and control strategy and policy.