PROMOTING THE QUALITY OF MEDICINES

# Promoting the Quality of Medicines (PQM)

## FY 2016 First Quarter Report
## October 1 - December 31, 2015

**Submitted to the United States Agency for International Development (USAID)**
**February 1, 2016**

**Agreement Number GHS-A-00-09-00003-00**

The Promoting the Quality of Medicines (PQM) program combats the proliferation of falsified and substandard medicines. Funded by the U.S. Agency for International Development (USAID), PQM is the successor to the Drug Quality and Information (DQI) program, implemented by the United States Pharmacopeial Convention (USP).

By providing technical assistance to developing countries, PQM achieves three main goals:

1. builds local capacity in medical quality-assurance systems
2. increases the supply of medicines to USAID health programs
3. ensures the quality and safety of medicines globally

This document does not necessarily represent the views or opinions of USAID or the United States government. It may be reproduced if credit is given to PQM and USP.

## About the Promoting the Quality of Medicines Program (PQM)

| | |
|---|---|
| USAID Funding Sources | Global Health Bureau; Office of Health Systems; Office of Health, Infectious Diseases and Nutrition; USAID Country Missions |
| Name of Implementing Partner | Promoting the Quality of Medicines<br>Implemented by the U.S. Pharmacopeial Convention |
| Cooperative Agreement Number | GHS-A-00-09-00003-00 |
| Period of Performance | October 1 to December 31, 2015 |
| Agreement Officer's Representative Team | Mr. Anthony Boni, Pharmaceutical Management Specialist<br>Ms. Elisabeth Ludeman, Pharmaceutical Management Advisor<br>Ms. Tobey Busch, Senior Pharmaceutical Management Advisor |
| PQM Responsible Staff | Jude Nwokike, Director |

## TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... 5
ACRONYMS ..... 7
PROGRAM BACKGROUND AND FRAMEWORK ..... 8
1) PROGRESS BY IRs ..... 10
**IR 1: National Regulatory Systems Strengthened** ..... 10
**IR 2: Availability of quality medicines** ..... 10
**IR 3: Amount of substandard and falsified medicines and medical devices reduced** ..... 11
**IR 4: Global advocacy on medicines quality enhanced through technical leadership** ..... 12
2) PROGRESS BY PORTFOLIOS ..... 13
**CORE PROGRAMS** ..... 13
Cross Bureau ..... 13
Core MNCH (Maternal, Neonatal, and Child Health) ..... 13
Core NTDs (Neglected Tropical Diseases) ..... 13
Core TB (Tuberculosis) ..... 13
Core Malaria ..... 14
**AFRICA & MIDDLE EAST** ..... 14
Benin ..... 14
Burkina Faso ..... 14
Angola ..... 14
Ethiopia ..... 14
Ghana ..... 15
Guinea ..... 15
Liberia ..... 15
Malawi ..... 15
Mali ..... 15
Mozambique ..... 16
Nigeria ..... 16
Senegal ..... 16
West Bank/Gaza ..... 17
**ASIA & CIS** ..... 17
Burma ..... 17
Cambodia ..... 18
Indonesia ..... 18
Kazakhstan ..... 19
Pakistan ..... 19

Philippines ..... 20
RDMA ..... 20
Uzbekistan ..... 21
**LATIN AMERICA & CARIBBEAN** ..... 21
AMI ..... 21
3) CHALLENGES ..... 22
4) LESSONS LEARNED ..... 24
5) SUSTAINABILITY ..... 26
6) MANAGEMENT OVERVIEW ..... 28

## EXECUTIVE SUMMARY

The Promoting the Quality of Medicines (PQM) program is part of the U.S. Pharmacopeial Convention (USP) and is tasked with assisting developing countries address critical issues related to poor quality medicines. The PQM program is made possible through the generous support of the United States Agency for International Development (USAID). The following report captures progress made towards PQM's four intermediate result areas for the FY16 quarter 1 period, from October 1st to December 31st, 2015.

**The following tables provide highlights of PQM's progress in FY16 Q1:**

| Area of Technical Assistance | Q1 FY16 Progress |
|---|---|
| Quality Control (QC) trainings | 12 training workshops held in 8 countries |
| Quality Management Systems (QMS) | 18 labs in 13 countries assisted |
| Medicines Quality Monitoring (MQM) | Active PQM Supported: 14 countries (122 sentinel sites) |
| | Active Country Operated: 7 countries (63 sentinel sites) |
| Good Manufacturing Practices (GMP) | 42 companies in 14 countries assisted |

**Accomplishments in strengthening medicines quality control:**

| Indicator | Q1 FY16 Progress |
|---|---|
| # of laboratories provided with equipment/supplies | 12 |
| # of laboratory instruments/equipment installed, calibrated and qualified | 50 |
| # of PEPFAR-supported testing facilities (laboratories) that are recognized by national, regional or international standards for accreditation or have achieved a minimal acceptable level towards attainment of such accreditation | 1 (Ethiopia) |
| # of ARV, OI, TB, antimalarials and MCH PMS samples tested | 1504 tests |
| # of APIs prequalified | API: 1 Prequalified |
| # of FPPs prequalified | FPP: 2 Global Fund ERPs |
| # of Dossiers accepted by WHO | FPP: 2 Dossier Accepted by WHO |
| # of WHO GMP inspections | FPP: 1 Successful WHO GMP Inspection |

High level program achievements according to four intermediate results are reported. The first result area is 'National Regulatory Systems Strengthening' and encompasses program progress towards expanding the capacity of national medicine regulatory agencies. The second result area is the 'Availability of Quality Medicines' and describes PQM's developments working with selected manufacturers to achieve compliance with internationally accepted practices, as well as prequalification programs. The third result area is the 'Amount of Substandard and Falsified Medicines and Medical Devices Reduced' and entails PQM technical assistance towards combating falsified and substandard medicines. The fourth result area, 'Global Advocacy on Medicines Quality Enhanced Through Technical Leadership,' highlights PQM's technical leadership and advocacy about the importance of medicines quality assurance at national, regional, and international levels.

Following achievements by result area, an in depth overview of quarterly accomplishments per individual portfolio are presented. The portfolios include PQM's five Core programs, 13 African/ Middle East programs, eight Asian/ Commonwealth of Independent States (CIS) programs, and one Latin American/ Caribbean program.

Aggregated program challenges encountered during the first quarter are then described. The challenges fall under the following categories: work plan and budget delay, budget constraints and issues with financial infrastructure, low price points that disincentivize essential medicine production, tenuous geopolitical and emergency conditions, and finally, human resource obstacles.

Lessons learned by PQM programs during the quarter are discussed. The lessons facilitate enhanced collaboration, which enables PQM's work to expand its breadth and depth. The lessons learned involve leveraging strategic partnerships among a multitude of stakeholders. In addition, some lessons offer transferrable processes to other PQM programs, as well as to the organization as a whole.

PQM's accomplishments towards embedding sustainability in its programming are then outlined. PQM aims to strengthen systems to the point that they become self-sustaining. Results are categorized under progress made towards sustainability in the following areas: government and regulatory agencies, laboratory, and manufacturing.

A summary of major managerial level activities, staff recruitment, and early organizational results are presented. PQM held a Global Retreat in October 2015, which focused on Operational, Programmatic, Technical, Monitoring and Evaluation Excellence, and also rolled out PQM's Results Framework with Level 1 and Level 2 indicators. The PQM Director's participation in major conferences, site visits, and travel are outlined. Staff recruitment for six crucial roles in the PQM organizational structure are discussed followed by early promising results in work plan approval and embedding sustainability into the implementation of interventions to ensure the development of resilient quality assurance systems.

## ACRONYMS

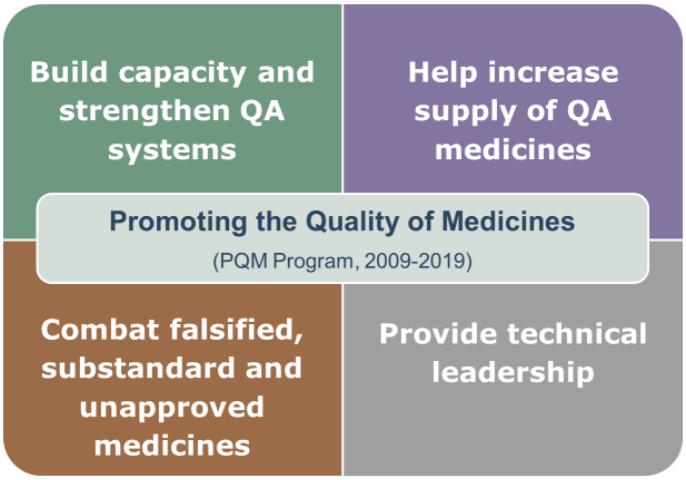
| | |
|---|---|
| API | Active Pharmaceutical Ingredient |
| BPOM | Indonesian National Agency of Drug and Food Control, (*interpreted)* |
| CAPA | Corrective and Preventive Action |
| CHX | Quality-Assured Chlorhexidine |
| DDF | Department of Drugs and Food (Cambodia) |
| DFDA | Department of Food and Drug Administration |
| DNPL | National Medicines Regulatory Authority (*interpreted)* (Guinea) |
| DPM | Directorate of Pharmacy and Medicine |
| DRAP | Drug Regulatory Authority of Pakistan |
| EFMHACA | Ethiopian Food, Medicine and HealthCare Administration and Control Authority |
| ERP | Expert Review Panel |
| FDA | Food and Drug Administration or Authority |
| FDQCC | Food and Drug Quality Control Center (Laos) |
| GMP | Good Manufacturing Practice |
| HPLC | High Performance Liquid Chromatography |
| ISO | International Organization for Standardization |
| LMHRA | Liberian Medicines and Health Products Regulatory Authority |
| MOH | Ministry of Health |
| MQM | Medicines Quality Monitoring |
| NHQC | National Health Products Quality Control Centre (Cambodia) |
| NTD | Neglected Tropical Diseases |
| PMS | Post-Marketing Surveillance |
| PQM | Promoting the Quality of Medicines Program |
| PZQ | Praziquantel |
| QA/ QC | Quality Assurance and Quality Control |
| QMS | Quality Management System |
| SOP | Standard Operating Procedures |
| TA | Technical Assistance |
| TB | Tuberculosis |
| UNICEF | The United Nations Children's Fund |
| USAID | United States Agency for International Development |
| USP | United States Pharmacopeial Convention |
| WHO | World Health Organization |
| WHO PQ | World Health Organization Prequalification Program |

## PROGRAM BACKGROUND AND FRAMEWORK

Figure 1: PQM Program Reach Worldwide

Since 1992, the U.S. Pharmacopeial Convention (USP) has worked cooperatively with the United States Agency for International Development (USAID) to help developing countries address critical issues related to poor quality medicines and their appropriate use. PQM serves as a primary mechanism to help ensure the quality, safety, and efficacy of medicines essential to USAID priority diseases, particularly malaria, HIV/AIDS, tuberculosis, and maternal and child health. The PQM program is USAID's response to the growing development challenge posed worldwide by falsified and substandard medicines. There is increasing recognition of the burden of these poor quality medicines and their threat to public health, especially in low- and middle-income countries. Falsified and substandard medicines can cause treatment failure and adverse reactions, increasing morbidity and mortality, and they may contribute to antimicrobial resistance. They represent not only a waste of scarce resources but also a substantial risk to public health. They further risk undermining decades of health investments, including those made by USAID.

PQM's work is based on four **Strategic Objectives** and four **Intermediate Results**:




| | |
|---|---|
| **IR 1** | **Build Capacity and Strengthen QA Systems** |
| **IR 2** | **Help Increase Supply of Quality of Medicines** |
| **IR 3** | **Combat Falsified, Substandard and Unapproved Medicines** |
| **IR 4** | **Provide Technical Leadership** |

### Global Overview of Progress

The PQM Program has presence in four countries (Ethiopia, Indonesia, Nigeria, and Philippines) and programs in 34 non-presence countries. Using a systems-based approach, PQM offers technical assistance (TA) in the several areas to achieve the above stated strategic objectives. Many of these approaches are replicated globally, but tailored to fit the needs of individual countries or regions. These approaches include building the capacity of medicine regulatory authorities to review and approve quality essential medicines and strengthen their ability to protect their own population from poor quality medicines. PQM works with national and regional regulatory authorities to build sustained capacity for medicines evaluation,

manufacturing inspection, and surveillance. PQM supports national quality control laboratories (NQCLs) through hands-on training and technical assistance to improve laboratory standards, with one goal being to assist those labs to attain internationally recognized certifications, such as International Standardization Organization (ISO) accreditation and/or World Health Organization (WHO) prequalification (PQ).

PQM also helps NQCLs implement or improve post-marketing surveillance (PMS) programs. One aspect of PMS is field-based medicine quality monitoring (MQM), which involves laboratory staff collecting medicine samples at sentinel sites. These samples are screened in the field using GPHF-Minilab™, and subsequently, undergo confirmatory testing in the laboratory.

PQM's system-based approach also extends to medicines manufacturers. PQM experts in Good Manufacturing Practices (GMP) travel to manufacturing sites to help companies improve their GMP compliance and develop dossiers to submit to the WHO Prequalification program.

## 1) PROGRESS BY IRs

In this section the key FY16 quarter 1 progress towards the PQM Intermediate Results (IRs) are presented.

### IR 1: NATIONAL REGULATORY SYSTEMS STRENGTHENED

Medicines quality assurance worldwide depends to a large extent on the capacity of national medicine regulatory authorities – each country needs a capable authority to safeguard the quality, safety, and efficacy of the medicines in the market. The support under this component, the first PQM intermediate result, varies from ensuring adequate quality assurance before products are allowed into the market, to training national quality control laboratories in Good Laboratory Practices, to introducing a post-marketing surveillance system.

The Ethiopian Medicines Quality Control (QC) laboratory reaccredited for International Standardization Organization (ISO) 17025:2005 standards for physicochemical and condom test methods with an expanded scope. An action plan along with 39 new Standard Operating Procedures (SOPs) were created to prepare the Liberian Regulatory Authority Quality Control Laboratory for ISO 17025 accreditation. A regulatory summit of over 80 participants, comprising representatives from six regulatory agencies and public health advocates, was convened in Mozambique. Lessons learned on how to effectively regulate the quality of medicines were shared by Nigeria, Ghana, Zambia, Liberia, and Mozambique. The PQM program helped the Ghanaian Food and Drug Administration (FDA) identify five different tests to add to the scope of ISO 17025 accreditation. DNPL (National Medicines Regulatory Authority) of Guinea was supported in reviewing the law documents and made planning to convene a stakeholders meeting to review the first draft prepared by PQM. The Nigerian National Agency for Food and Drug Administration and Control (NAFDAC) Yaba analytical laboratory was prepared towards ISO 17025 reaccreditation. In addition, the National Institute for Pharmaceutical Research and Development (NIPRD) conducted an initial assessment at the Kaduna laboratory, which included facility inspection, document evaluation of quality management system, evaluation of physicochemical assays, and review of key operational and technical SOPs.

PQM conducted recalibration and requalification of essential laboratory equipment in the Department of Food and Drug Administration (DFDA) Nay Pyi Taw (NPT) QC laboratory of Burma. PQM provided technical support and guidance to the National Health Products Quality Control Centre (NHQC) of Cambodia in developing the core essential documents and SOPs toward meeting the Quality Management System (QMS) and technical requirements of ISO/IEC-17025 for a projected goal to attain accreditation status by Dec 2017 or early 2018. PQM and the Indonesian National Agency of Drug and Food Control, (BPOM) Indonesia successfully managed to lobby the national accreditation body, KAN, to revise their accreditation scheme for the Indonesian QC Laboratory (PTBB) with a focus on scope (method-based) rather than the previous product-based accreditation. This represents major progress in harmonizing the accreditation process towards internationally-recognized standards, in line with the WHO PQ. PQM also followed up progress made by the Food and Drug Quality Control Center (FDQCC) of Laos in revising its Quality Manual (QM) and relevant SOPs transforming from product-based to method-based ISO/IEC 17025 accreditation.

### IR 2: AVAILABILITY OF QUALITY MEDICINES

To ensure the availability of quality medicine in the market, PQM is working with selected manufacturers of medicines to achieve compliance with internationally accepted GMP, as well

as supporting international pre-approval or prequalification programs. This forms the basis for the second intermediate result, namely to increase the availability of quality-assured medicines in the market.

Chlorhexidine Gel (7.1%), an essential commodity used for umbilical cord care, was registered in Kenya by Universal Corporation. The company has been a recipient of PQM's technical assistance and has become the first domestic manufacturer in Kenya to register the product. In support of The United Nations Children's Fund (UNICEF) supply division, PQM analyzed samples representing over 22,000 doses of vitamin A intended for supplementation. Each batch was found to meet specifications indicating the treatments were of good quality. As part of the Neglected Tropical Diseases (NTDs) portfolio, PQM evaluated three product dossiers related to WHO PQ of medicines and supported one Expert Review Panel (ERP) submission application. WHO PQ approval was obtained for Fuzhou Fuxin non-sterile Kanamycin Active Pharmaceutical Ingredient (API), and ERP Category 3 approval was obtained for Kanamycin Finished Pharmaceutical Product (FPP) (0.5 and 1.0 g) for Shanghai Harvest.

PQM's technical support through mock assessment and continuous follow-ups to local manufacturers in Ethiopia has enabled one manufacturer, Cadila Pharmaceuticals, to submit Ethambutol dossier for WHO PQ program. Following PQM TA to local manufacturers, UNICEF conducted a Quality Assurance (QA) and GMP audit in three manufacturing companies for Chlorhexidine, Amoxicillin DT, Zinc dispersible tablet, and ORS to ensure that the local manufactures meet internationally accepted WHO guidelines and standards. PQM continues to provide TA to these manufacturers to address Corrective and Preventive Actions (CAPA) identified in the audit. CHI pharmaceuticals had all CAPAs accepted by UNICEF and is currently engaging in discussions to supply quality assured ORS and zinc to UNICEF. PQM has been providing TA to four manufacturers in Pakistan with potential capability to produce quality-assured chlorhexidine (CHX) gel products to support the national government's objectives in reducing the morbidity and mortality of newborn babies from preventable infection on their umbilical cords. A mock audit was conducted at Hizon Laboratories in Philippines as part of the process of supporting them toward WHO PQ for levofloxacin 500mg tablets.

## IR 3: AMOUNT OF SUBSTANDARD AND FALSIFIED MEDICINES AND MEDICAL DEVICES REDUCED

PQM is combating falsified and substandard medicines in coordination and cooperation with national authorities, relevant regional mechanisms, international organizations, and other stakeholders – both in the context of national quality assurance programs and in the context of regional and international initiatives against these types of medicines. Under this component, the third intermediate result, PQM is providing technical assistance to countries that ranges from strengthening their human resources in this area through training programs to setting up institutional mechanisms for corrective actions.

Eight different types of antimalarial medicines were collected and screened in Angola. After confirmatory tests were conducted in an ISO 17025 accredited lab, four were confirmed to be of poor quality. Follow ups are being made to take regulatory actions. Four branch labs of Ethiopian Food, Medicine and HealthCare Administration and Control Authority (EFMHACA) were supported to start conducting post marketing surveillance of medicines. A total of 338 antimalarial and analgesic samples were collected from seven sentinel sites of the Food and Drugs Authority (FDA) of Ghana; six antimalarial medicines failed testing. FDA Ghana sent official communication to all regional offices to ensure recall of all affected batches of antimalarials and analgesics from the market. MQM round five tested 230 samples of anti-malarial medicines at the Liberian Medicines and Health Products Regulatory Authority (LMHRA) QC Lab in Monrovia; 18 of the samples have been declared failed. The Liberian

Medicines and Health Products Regulatory Authority (LMHRA) has begun taking appropriate regulatory actions. 300 samples that consisted of antituberculosis, antimalarial, antibiotics, analgesics, and antiretroviral drugs were screened with Minilab™ and tested at the lab; one lot of Lamivudine/Zidovudine was confirmed to be out of the specification limit. The authority is taking appropriate regulatory actions. The sentinel site in Bicol, Philippines collected 74 TB medicines and performed basic testing (physical/visual, disintegration, and Thin-Layer Chromatography (TLC)) at the site, and seven out of 74 were submitted to FDA lab for confirmatory analysis. The results of the confirmatory tests will be released in January 2016. 64 samples of antimalarials and antibiotics were collected from Laos at border areas and 62 of them went through confirmatory analysis; none of the samples failed quality testing.

## IR 4: GLOBAL ADVOCACY ON MEDICINES QUALITY ENHANCED THROUGH TECHNICAL LEADERSHIP

PQM is providing global technical leadership and advocacy about the importance of medicines quality assurance at national, regional, and international levels. The activities under this component, the fourth intermediate result, include playing an active role in relevant policy discussions or initiatives among major partners to promote good quality medicines and fight falsified and substandard products; ensuring continued attention that any ongoing and new international procurement mechanism includes appropriate quality assurance requirements and/or provisions to promote quality assurance in countries; undertaking high quality research where needed and developing efficient new quality testing techniques and approaches.

PQM participated and presented at the American Society of Tropical Medicine & Hygiene (ASTMH) Annual Meeting where Medicines Quality Database (MQDB) data related to the pandemic of falsified and substandard medical products were analyzed and presented to approximately 100 participants. PQM provided leadership on collaborative research to enhance the knowledge of NTD medicines through technical research of Praziquantel (PZQ) drug substance characterization on polymorph, solubility, permeability, and overall demonstration of the Bio Waiver Classification System (BCS). A one day dissemination meeting aimed at updating stakeholders on medicines quality in Liberia was held in Monrovia. Participants committed to work with the LMHRA in fighting against poor quality medicines throughout Liberia. As a result of continuous advocacy on medicines quality to key stakeholders and donors in Burma, PQM leveraged $31,000 from the WHO country office to cover two training courses in December 2015. Likewise, PQM leveraged funds from the WHO Cambodia country office to cover two training workshops that will occur in quarter 2.

## 2) PROGRESS BY PORTFOLIOS

### CORE PROGRAMS

**Cross Bureau**

To increase awareness of the importance of medicines quality and provide technical leadership to regional networks of medicines quality assurance professionals, PQM participated and presented at several international meetings. Among these, PQM participated and presented at the American Society of Tropical Medicine & Hygiene (ASTMH) Annual Meeting where MQDB data related to falsified and substandard medical products were analyzed and presented to approximately 100 participants. PQM explored opportunities for collaboration with World Wide Antimalarial Resistance Network (WWARN) for sharing information using the WWARN Surveyor database and MQDB. New data from the Philippines are currently being added to MQDB. In addition, 14 new reports on falsified and substandard medicines have been identified and are being added to the PQM media report.

Boston University has developed a benchtop system to optimize the function of the next PharmaChk prototype. Multiplex chip was tested with a fixed-dose amodiaquine-artesunate tablet. To validate the results obtained with the probe for amodiaquine, PQM received a sample of amodiaquine-artesunate tablets and is currently conducting assay testing on the sample. Boston University is concomitantly conducting testing of the same samples using PharmaChk. In order to develop a framework and guideline for a risk-based approach to post-marketing surveillance (PMS), PQM has collected information on PMS in several countries; analysis is currently underway.

**Core MNCH (Maternal, Neonatal, and Child Health)**

PQM conducted a baseline GMP assessment of Regal, a Kenyan pharmaceutical beta-lactam facility, in November 2015. The assessment identified objectionable observations regarding GMP compliance to quality systems, premises, and laboratory, as well as issues with product formulation, which will ultimately assist the company improve its operations. PQM successfully facilitated the Kenyan pharmaceutical manufacturer, Universal Corporation, to register their chlorhexidine gel (7.1%) product with the Kenya Pharmacy & Poisons Board in November 2015. PQM also conducted follow-up CAPA evaluations of Universal and Regal chlorhexidine manufacturing facilities to determine their status in addressing the gaps identified. Vitamin A deficiency is a public health problem, however, high-dose vitamin A supplementation is recommended in infants and children 6–59 months of age as a solution. In support of these efforts, PQM analyzed samples representing 9,640 doses and 13,635 doses of 100,000 and 200,000 international units (IU) vitamin A medicines, respectively, for UNICEF. Each batch was found to be of good quality.

**Core NTDs (Neglected Tropical Diseases)**

Two manufacturers received technical assistance on dossier and GMP inspection of manufacturing activities to help build quality of medicines in to the system that mitigates risks of failure in treatment. Information around the NTD medicines quality, as well as product characteristics, is scarce to make immediate regulatory actions. In response to this situation and to help the manufactures improve the knowledge of the drug substance, PQM initiated and supported the Bio Waiver Classification System (BCS) study in collaboration with University of Minnesota on Praziquantel (PZQ) drug substance characterization to expand the knowledge of NTD medicines globally.

**Core TB (Tuberculosis)**

The Core TB team provided TA to Shanghai Harvest Pharmaceutical Company for ERP approval. Shanghai Harvest was able to obtain ERP approval to supply their Kanamycin FPP for one year while their CTD (Common Technical Document) is under review by WHO PQ. The PQM team also provided assistance to Shanghai Harvest's FPP facility to help

them successfully pass WHO inspection. Prior successful inspection and assistance to Fuzhou Fuxin dossier queries led to WHO PQ approval for Fuzhou Fuxin's non-sterile Kanamycin API. PQM staff made a trip to the Republic of Korea in December to meet with the technical team of Dong-A ST pharmaceutical company to review their technical capabilities and sign a Memorandum of Understanding (MOU) for development of Clofazimine API and FPP. By signing this MOU, PQM will be able to bring an essential medicine to market that is in dire shortage globally. In November 2015, the PQM team attended the Joint WHO-UNICEF-United Nations Population Fund (UNFPA) Manufacturer's meeting to stay abreast of the latest information in WHO PQ for essential medicines, procurement practices, latest requirements, etc.

**Core Malaria**

The Core Malaria work plan was approved.

## AFRICA & MIDDLE EAST

**Angola**

Two Ministry of Health (MOH) staff members, the Inspector General, and Inspector General Staff Members attended the Regulatory summit in Mozambique that provided lessons learned to Angola on how other African countries regulate medicines, the intricacies of the law that govern regulation, and the challenges that the different countries face in regulating substandard and poor quality medicines. PQM also held a Minilab™ training attended by over 30 Angolan MOH and Inspector General staff to prepare for screening of poor quality medicines in the country. PQM provided two additional Minilab™ units to be used in two provinces to screen for poor quality medicines. Samples were collected from the regions and 50% of antimalarial samples collected failed.

**Benin**

Work plan approved at the end of Q1, no results to report.

**Burkina Faso**

Work plan not approved during Q1, no results to report.

**Ethiopia**

The PQAD, the official medicines quality control laboratory of Ethiopia, was reaccredited for ISO 17025:2005 with regard to the seven physicochemical test methods (Chromatography/ High Performance Liquid Chromatography (HPLC), Spectrophotometry/ UV/VIS, pH; dissolution; LOD; KF, Uniformity of Dosage Units) and expanded by one additional physicochemical method, conductivity. In addition, the five condom tests were also reaccredited. The accreditation of the lab has also built public confidence in EFMHACA, which has banned and recalled the distribution of nine lots of condoms as a result of quality failure which otherwise may have resulted in the transmission of HIV/ AIDS or other infectious diseases. PQM supported four EFMHACA branch labs to initiate post marketing surveillance activities on defined medicines. Currently, the branch labs are collecting medicine samples from selected sites. In FY16, out of 50 different medicines targeted to be covered under national PMS program, 21 are planned to be carried out by branch laboratories. Collection of samples is underway while PQM supports the branch labs by building staff capacity, supplying chemicals, and provision of technical assistance in developing strategy.

Development of two guidelines (Guideline for submission of Post-Approval Variation Medicines Application and Guidance on Biowaiver of In-vivo Bioequivalence Requirements) have been finalized and posted on the Ethiopian Food, Medicine and HealthCare Administration and Control Authority (EFMHACA) official website. In addition, three guidelines (Good Storage, Good Distribution, and Recall) were published and distributed to EFMHACA and stakeholders. PQM supported the development, printing, and distribution of 2,500 copies of the guidelines.

Through PQM's continued technical support and capacity building activities, GMP compliance of four local manufacturers has shown improvement. As a result, one of the PQM supported manufacturers, Cadila Pharmaceuticals, was able to submit Ethambutol dossier for WHO PQ. PQM is supporting EFMHACA to monitor the quality of condoms imported into the country. Additionally, EFMHACA issued national certification of compliance to four local manufacturers supported by PQM.

**Ghana**

FDA Ghana presented on its national regulation of medicines at the Mozambique Regulatory Summit held in Maputo in October, 2015. The summit was attended by over 80 regulatory and public health advocates. PQM has helped FDA Ghana identify five different tests to add to the scope of ISO 17025 accreditation. A total of 397 antimalarial and analgesic samples were collected from seven sentinel sites of the Food and Drugs Authority; six antimalarial medicines failed testing. FDA Ghana sent official communication from management of FDA to all regional offices to ensure recall of all affected batches of antimalarial and analgesics from the market.

**Guinea**

With PQM support, the national Guinean medicines regulatory agency, DNPL, benefited from the first review of the authority law documents. This review will help DNPL and other key stakeholders make changes to the existing law and clarify the DNPL mandate. To improve lab technical capacity, PQM installed a new HPLC system and two pieces of lab equipment donated by USP.

**Liberia**

As part of PQM technical assistance to the Liberian Medicines Health Products Regulatory Authority, LMHRA, PQM prepared an action plan for laboratory ISO 17025 accreditation. Due to the Ebola outbreak, the TA was provided remotely. To date, 39 SOPs and four work instructions have been reviewed. The Lab is gradually embarking on ISO 17025 requirements for accreditation. In the QC Lab, sample collection and testing are well documented, equipment is used in accordance with the newly established SOPs, and analyst reporting method has improved.

PQM witnessed the collection of 370 medicines samples from Monsterrado, Bong, Nimba, Margibi, and Bomi counties collected from both public (49%) and private (51%) sectors; anti-malarial drugs accounted for 62% (230) of the samples collected. Preliminary results from the LMHRA QC Lab suggest that out of the 230 samples tested, 18 samples failed. Most of the failed samples were collected from Bong and Nimba counties. These preliminary findings indicate that LMHRA is controlling the pharmaceutical market at the central level while illegal sellers are shifting towards the rural areas and borders with a neighboring country, such as Guinea.

**Malawi**

Through the PQM African support program for Malawi, a full assessment of the Malawi national regulatory agency (PMPB) was conducted. The assessment report has been sent out to the agency and will be shared with the local mission. The baseline assessment across the entire regulatory element arena, including the national laboratory accreditation, will be used as a lead document for PQM's future TA.

**Mali**

Following the dissemination of the results of last year's round of sampling and testing of antimalarial medicines and the lack of action taken by the regulatory authority, PQM had several communications with the Directorate of Pharmacy and Medicine (DPM) in order to promote regulatory actions on falsified and substandard medicines. The DPM Director had agreed to share the action plan of the National Committee on Illicit Medicines with PQM for assistance in the implementation of the action plan. PQM is in the process of helping the National Laboratory of Health of Mali (LNS) develop a five-year strategic plan in collaboration with the Global Fund to Fight AIDS, Tuberculosis, and Malaria and with France

Expertise Internationale (FEI). PQM drafted the steps to be followed in gathering and analysing information needed to develop the plan.

To strengthen post-marketing surveillance of antimalarial medicines quality in Mali, PQM promoted the implementation of the action plan developed by stakeholders at the workshop for dissemination of the results of the latest round of sampling and testing of these medicines. As a result, LNS will decentralize some quality control activities and hire more staff to oversee the implementation of PMS activities at three sentinel sites.

**Mozambique**

With PQM support, the national laboratory was assessed by an official accreditation body, gaps were identified, and a targeted timeframe to achieve ISO 17025 accreditation was established. Over 30 SOPs have been reviewed and 10 new SOPs have been drafted and translated into Portuguese. The national laboratory has been able to effectively test and identify poor quality medicines that do not comply with compendial testing. The laboratory has collected and screened over 300 antituberculosis, antimalarial, antibiotics, analgesics, and antiretroviral medicines.

A regulatory summit of over 80 regulatory and public health advocates was held in October 2015 that included five regulatory agencies whereby lessons learned were shared by Nigeria, Ghana, Zambia, Liberia, and Mozambique on how to effectively regulate the quality of medicines. The agencies shared the tools used to detect poor quality medicines, the laws governing the control of poor quality medicines, and ways to improve their agencies. Through the lessons learned from other agencies with active and functional law, the Mozambique agency has looked to PQM for assistance to improve their registration of medicines and clearly delineate the role of the Pharmaceutical Department.

**Nigeria**

PQM supported NAFDAC on the assessment of the Kaduna Area and Agulu Zonal Laboratories on staff competency, key quality control techniques, and reviewed SOPs in their QMS in pursuant of ISO 17025 accreditation. The assessment identified gaps and opportunities for improvement in the area of QMS related to ISO 17025, document control, record control, safety, and provided recommendations to implement systemic medicine quality control improvements. PQM also provided technical assistance to NAFDAC Central Laboratory, Yaba and strengthened QMS to maintain ISO 17025 accreditation. In November, a PQM team visited to perform a mock audit, address CAPA, facilitate calibration of equipment, follow-up on internal audits, and perform analytical and technical group trainings. In addition, PQM assisted NAFDAC to conduct a gap analysis/ baseline study at its Pharmacovigilance/ Post-marketing Surveillance directorate to ensure a coordinated post-marketing surveillance practice. A 15 person academic committee from Nigerian universities gathered to review current pharmacy and chemistry curricula in order to make educational instruction more relevant to the industry.

Following PQM TA to local manufacturers, UNICEF conducted a QA and GMP audit in three manufacturing companies: Chi Pharmaceuticals Ltd., Daily Needs Pharmaceutical Ltd., and Drugfield Pharmaceutical Ltd. for Chlorhexidine, Amoxicillin DT, Zinc dispersible tablet, and ORS to ensure that the local manufactures meet internationally acceptable standards. PQM continues to provide TA to these manufacturers to address CAPA identified in the audit. NIPRD Analytical lab is an independent third party laboratory for local manufactures in Nigeria. PQM, in its assistance to local manufacturers, is supporting NIPRD to obtain ISO 17025 accreditation to enable Nigerian manufacturers to access a quality control laboratory capable of producing trustworthy and valid results. PQM is also working towards assuring that NIPRD's QMS, administrative, and technical operations are functioning at the highest level and meeting internationally recognized standards.

**Senegal**

To start the implementation phase of the Inter-Ministerial Committee (IMC), PQM organized a workshop with the Directorate of Pharmacy and Medicine (DPM) and other ministries. The

workshop helped the DPM in forming a working group with parties representing each entity and Ministry of the IMC. The role of the working group is to establish an action plan that responds to the recommendations of the workshop. One of the action items developed by the working group is to organize a campaign "Operation Coup de Point" with a goal of taking major regulatory actions on pharmaceutical black markets.

**West Bank/Gaza**

During the first quarter, PQM prepared for two major events: a full GMP audit of two manufacturing facilities, Bir Zeit and Beit Jala, and a key stakeholder meeting with the objective of strengthening the quality control of medicines in West Bank by assisting the Central Public Health Laboratory (CPHL) to reach WHO Prequalification status and/or ISO170025 accreditation.

The most significant hurdle to regional manufacturers is the lack of a GMP Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme (PIC/S) certification that would enable them to market products internationally. There is a high potential for the manufacturers to move to the next level of GMP standards once they are provided with technical assistance in this area. The full GMP audit of the manufacturing facilities, based on the certification guidelines, will enable Bir Zeit and Beit Jala pharmaceutical manufacturers to adequately prepare for inspections by a PIC/S member country. Once found GMP-compliant, the pharmaceutical manufacturer will have access to the international markets for their product(s) on the product line(s) approved. Certified member companies generally recognize approvals of GMP assessments carried out by other members.

PQM coordinated a meeting to be held with key stakeholders to discuss the implementation phase of assisting the Central Public Health Laboratory (CPHL) to become ISO 17025 accredited and/or WHO pre-qualified. Having these two international standards for testing medicines, the CPHL will be able to provide high-quality, reliable data to manufacturers, and partners involved in procuring quality-assured medicines, such as the United Nations Development Programme (UNDP) among others. WHO-PQ status and/or ISO 17025 accreditation will enable the lab to provide QC results in a shorter time which will improve drastically the authority's functions and manufacturer requests for marketing authorizations as well as allow the lab to generate additional income.

## ASIA & CIS

**Burma**

In preparation towards ISO 17025 accreditation, PQM conducted re-calibration and re-qualification of essential laboratory equipment of the Department of Food and Drug Administration (DFDA) Nay Pyi Taw QC Laboratory in December 2015. One UPLC system, which had been procured through government funding and was never used due to a lack of calibration and qualification body in the country, was qualified by the PQM team for the first time and the system was put into routine analytical work of the laboratory. The PQM team conducted requalification on three HPLC systems, one of which, Agilent Infinity 1260 series, was donated to the laboratory by PQM in 2014. Donated by PQM in 2013, a Hanson Vision 6 Dissolution Tester was serviced, underwent mechanical calibration, and PVT by a PQM team. The PQM team also conducted an advanced analytical training using UPLC system in DFDA Nay Pyi Taw Laboratory.

Fifteen analysts from the laboratory participated in the training and gained knowledge and expertise on the proper usage of UPLC machine, compendial analysis of Dihydroartemisinin, and Piperaquine fixed dose combination. The PQM team found out that DFDA Nay Pyi Taw Laboratory had procured a Liquid Chromatography–Mass Spectrometry (LC-MS) system that was never used due to lack of proper training to the analysts. The PQM team provided hands-on training and basic procedures on the LC-MS machine so that DFDA analysts may begin performing analytical work on the machine. PQM conducted a regional workshop on Pharmaceutical Supply and Distribution Chain Inspection for inspectorates in Laos and

supported two participants from DFDA Burma to attend. The participants gained knowledge and expertise on inspection techniques and on the pharmaceutical supply and distribution chains from a regulatory perspective. Participants also had the opportunity to share experiences with their counterparts from countries in the region. The delegates also participated in BREMERE Review Meeting, which was held consecutively with the Regulatory Inspection Training Workshop.

**Cambodia**

PQM supported three Cambodian drug inspectors from Cambodian Medicines Regulatory Authority, known as Department of Drugs and Food (DDF), to attend a regional Training-of-Trainer training on "Regulatory Inspection of Pharmaceutical Distribution Chains," which was conducted in Vientiane, Laos. These three inspectors will serve as country trainers to conduct seminal and country specific trainings to DDF/MOH's drug inspectors for the whole country. With the financial support leveraged from WHO and the technical support from PQM, two training material courses have been developed: one on Good Regulatory Practices focusing on Good Inspection Practices of Pharmaceutical Distribution Chains for Cambodian Inspectors and the other on Good Practices for Pharmaceutical Quality Control Laboratories for the National Health Products Quality Control Centre (NHQC) staff. Both trainings will be conducted in the second quarter.

To enhance the pharmacy education on good practices of pharmacists and regulatory inspectors, PQM collaborated with and provided support to the University of Health Sciences, a public institution, and the International University, a private institution, to conduct workshops on "Improving the Quality of Pharmacy Education." 86 participants representing key departments and faculty members/lecturers from the two universities attended the workshops. As a result of the workshops, both universities' presidents and deans committed to develop a curriculum improvement plan with a specific timeline and which will secure the buy in, support, and clearance from the Ministry of Education and Ministry of Health for adoption and implementation. PQM provided technical support to NHQC to develop documents toward meeting the QMS and technical requirements of ISO/IEC-17025 for a projected goal to attain accreditation by December 2017 or early 2018. In December 2015, 28 SOPs, including a Quality Manual, were reviewed. NHQC set up a management team to finalize these 28 SOPs in January 2016.

**Indonesia**

PQM participated in a "Joint Mock Audit" prior to an official WHO audit for Prequalification at the Hizon Laboratories manufacturer in Manila, Philippines. The four day training was to increase technical knowledge of PQM Indonesia's GMP staff to identify and advise the manufacturers on any issues related to GMP assessment and audit. A four day follow up visit and audit was conducted by PQM to three manufacturers currently under PQM support: PT. Kimia Farma, PT. Sanbe/Caprifarmindo, and PT. Kalbe Farma. PQM supported the National Regulatory Authority to participate in a seven day International Training Program at USP headquarters in Rockville, MD to improve their capacity on public quality standards. 14 laboratories have been selected to participate in the USP Inter Laboratory Testing (ILT) scheme in 2016. Under this program, laboratories will test standardized samples, and their performance will be evaluated by USP in order to help provide baseline information on the testing and reporting capabilities of the central and provincial QC laboratories at BPOM.

PQM and BPOM managed to lobby the national accreditation body, KAN (Komite Akreditasi Nasional), to revise their accreditation scheme for the Indonesian QC Laboratory (PTBB) with a focus on scope (method-based) rather than the previous product-based accreditation. This represents major progress in harmonizing the accreditation process towards internationally recognized standards, in line with WHO PQ. This type of accreditation will enable the national QC laboratory, PTBB, to increase the number of products it can officially test, and will not be constrained to testing on a product-by-product accreditation basis. This will also reduce the amount of human and financial resources previously used to achieve certification on individual products. PQM supported the MOH to conduct a high level decision maker meeting on WHO PQ for local pharmaceutical manufacturers in Indonesia. PQM

facilitated the preparation of this important meeting, provided input on the key ideas, and sponsored an Independent Expert, who was formerly the Regional Essential Medicines Team Leader at WHO-WPRO to give a presentation on behalf of WHO Indonesia. 39 participants attended the meeting including representatives from MOH, BPOM, Ministry of Trade, Presidential Secretariat, Manufacturers, USAID, and USP. An action plan towards WHO PQ was submitted to MOH after the meeting and the Ministry agreed to revise the Roadmap for Independency of Raw Material, which could have tremendous impact in developing this industry in Indonesia.

**Kazakhstan**

PQM made a two-day follow-up visit to Nobel Almaty Pharmaceutical Factory, in Almaty, Kazakhstan to discuss the progress related to the development of levofloxacin, moxifloxacin, and albendazole tablets; to review and verification of their CAPA plan items; and to discuss the HVAC control system. The first visit to Nobel Almaty Pharmaceutical Factory was made in FY15. Approximately half of the agreed upon CAPA items have been successfully closed; additional clarification was given on some items that remained open, and others will require closer oversight and potential training activities to ensure a timely completion of outstanding CAPA items.

**Pakistan**

PQM lent support for greater availability of quality-assured chlorhexidine (CHX) gel to reduce the morbidity and mortality of newborn babies in the area of formulation, production, and registration status. PQM visited two potential manufacturers (Friends Pharma in Lahore and Atco Pharma in Karachi) and engaged others (Akhai Pharma in Balochistan and Zafa Pharma in Karachi) for developing the formulation through continuous communication and advocacy. Each of the companies has been working, to varying degrees of progress, toward completing the CHX gel formulation, lab scale production, and conducting stability studies as required by DRAP for fast-track registration. Training course on CHX quality testing has been developed and inter-laboratory testing program has been initiated to government QC labs (federal and provincial) and interested manufacturers. Sampling methodologies and techniques development for imported CHX gel products were initiated (for receiving of consignments at port of entries, post-marketing surveillance, and monitoring). PQM provided comparator CHX gel samples from Drugfield Nigeria to Atco Pharma and Friends Pharma for use to compare the test/experiment product behavior on some key quality attributes, e.g., physical/organoleptic appearance, solubility.

PQM provided technical inputs to and review of Stability Studies Guidelines for Pharmaceuticals developed by DRAP that are also applied to CHX gel products being produced at lab scale. PQM provided inputs and review of the 'Medical Notice for CHX Digluconate 7.1% w/v for umbilical cord care' developed by JSI-USAID/DELIVER project. PQM initiated discussion with Lomus of Nepal on possibilities for technology transfer to interested Pakistani local CHX producers. Efforts have been in progress to advocate DRAP to adopt the International Conference on Harmonisation (ICH) and WHO guidelines for improving quality of medicines by implementing requirements on Product Development and Stability Guidelines. The DRAP has adopted the requirement of Stability Guidelines while allowing registration to generic and originator molecules. A preliminary guideline for stability studies on Lab Scale batches was designed by DRAP, which is now being reevaluated, as it was irrational and asked for substantial testing at narrow time-point intervals.

Two successful training workshops were conducted after effort was put into getting authorization from the main country counterpart, DRAP, with the support from the USAID Activity Manager. PQM was able to successfully conduct two training workshops: The Good Practices for Pharmaceutical Quality Control (GPPQC) and Laboratory Management for Laboratory Managers and Senior Analysts; and The GMP Inspection for DRAP Inspectorates at Federal and Provincial Levels. The events were highly acknowledged by the DRAP CEO, provincial inspectors and Drug Controllers, and directors and Lab analysts, and were also highly appreciated by the Secretary of Ministry of National Health Services, Regulation & Coordination (MNHSR&C).

**Philippines**

The PQM GMP team conducted a GMP Mock Audit and Dossier Review at Hizon Laboratories and held meetings with the Philippines Food and Drug Administration (FDA) and Key Stakeholders of TB Medicines. The audit was performed based on the proposed agenda by WHO PQ using the general scheme of the systems approach for auditing the manufacture of pharmaceuticals. A meeting with FDA regulatory officers and the Department of Health/National TB Program (DOH-NTP) was also conducted to discuss the issues tackling the entry and product registration of Global Drug Facility (GDF) donated medicines for the National TB Program. A consultative meeting with local pharmaceutical manufacturers regarding orientation on the WHO PQ process was conducted and attended by five local pharmaceutical companies (United, Lloyd, Scheele, Interphil, and Pfizer). PQM supported the Philippines FDA to participate in a seven day International Training Program at USP headquarters in Rockville, MD to improve the capacity of the authority on public quality standards.

PQM visited Iloilo and Zamboanga City for monitoring and evaluation of TB medicines in the Philippines and conducted basic testing and disintegration at FDA laboratories in Manila. The Bicol Region collected 74 TB medicines and performed basic testing (physical/visual, disintegration, and Thin-Layer Chromatography) at the site, and seven out of 74 were submitted to FDA laboratories for confirmatory analysis. The results will be released in January 2016. The PQM Philippines staff attended the Philippines FDA National Consciousness Week against Counterfeit Medicines. Topics discussed included an overview of Counterfeit Medicines in the Philippines and FDA's initiatives, pharmacovigilance, initiatives of the Intellectual Property of the Philippines (IPOPHL) in combating the Proliferation of Counterfeit Medicines in the Philippines, and initiatives of the Bureau of Customs (BOC) in combating the Proliferation of Counterfeit and Illegally Diverted Medicines among others.

**RDMA**

As part of an effort to strengthen the national and regional capacity and capability in medicines quality control areas, PQM followed up progress made by the Laos Food and Drug Quality Control Center (FDQCC) in revising its Quality Manual (QM) and document of procedures transformation from product-based to method-based ISO/IEC 17025 accreditation. These documents are being reviewed by the PQM QMS team and found most of them acceptable. A PQM QMS team member has been in communication with the Pharmaceutical Technology Service Center (PTSC) Lab of Chulalongkorn University in Thailand to ensure they are making progress toward submission of EOI to WHO PQ by July/August 2016. Laos MOH/FDD, BFDI, FDQCC, and provincial Food and Drug inspectors conducted PMS activities to collect 64 samples of antimalarials and antibiotics from the border areas with Vietnam, Thailand, and Cambodia, and 62 of the samples went through confirmatory analysis; none of the samples failed quality testing.

PQM developed and finalized 11 training modules on regulatory inspection for inspectors on pharmaceutical distribution chains. These training modules were delivered at the regional workshop led by PQM in collaboration with Laos MOH Food and Drug Department (FDD) and Bureau of Food and Drug Inspection (BFDI). The Regional Training of Trainers Workshop on Pharmaceutical Supply and Distribution Chain Inspection for inspectorates was held on November 4-6, 2015 in Vientiane, Laos, and 38 inspectorates representing regulatory agencies officials from Burma, Cambodia, Indonesia, Laos, Philippines, Thailand, Vietnam, and Malaysia attended among others. The participants gained new knowledge and expertise on inspection techniques on pharmaceutical supply and distribution chain from a regulatory perspective. Participants also had the opportunity to share experiences with their counterparts from countries in the region. Participants successfully conducted practical inspection at five pharmaceutical companies and pharmacy outlets in Vientiane, Laos. The findings from the inspection were presented, and many of the participants expressed willingness to apply the new knowledge and skill gained from this workshop to their routine work. The delegates also participated in BREMERE Review Meeting, which was held consecutively with the Regulatory Inspection Training Workshop. The meeting was

participated and presented by all BREMERE Initiative member countries including (Burma, Cambodia, Laos, Thailand, Vietnam, and Philippines), WHO SSFFC and ASEAN Post-Marketing Surveillance Alert System (PMAS) in Vientiane, Laos. The participants from all countries agreed that BREMERE initiative is necessary for information sharing in the region.

**Uzbekistan**

As per the request of the Mission for minor revisions, the FY16 work plan was revised and submitted to the Mission in November 2015 and has not been approved as of yet.

## LATIN AMERICA & CARIBBEAN

**AMI**

PQM initiated discussions with the Pan American Health Organization for the coordination of activities to support a framework for sustainable South-South collaboration to strengthen regional regulatory authorities, mostly related to Official Medicines Control Laboratories capabilities. PQM also participated in a regional consultation meeting to discuss the Strategy and Plan of Action for Malaria in the Americas for the 2016–2020 period.

## 3) CHALLENGES

Programs in Pakistan, Burma, Ethiopia, and Indonesia shared challenges encountered during the first quarter. In Pakistan, a nascent program, PQM does not yet have formal representation as an INGO, a process which requires registration by the Pakistani Ministry of Interior. PQM is currently building a working relationship with its main partner in Pakistan, the Drug Regulatory Authority of Pakistan (DRAP). Despite the fact that the mission took the lead in collaborating with DRAP, PQM faced communication delays. The visa application process was also lengthy and insufficient; only one single entry has been issued despite multiple entry visa requests made. For the Burmese program, obtaining required approvals and documents such as an import permit and tax and customs duty exemptions for sending supplies remains a key challenge. The approval process takes two to three months; meanwhile the PQM program is forced to use the available supplies in the Department of Food and Drug Administration (DFDA) laboratory with an agreement to replenish at a later date. In Ethiopia, there have been recurrent delays in approvals of tools and documents developed and submitted to the EFMHACA as the agency struggles to implement its many activities. The implementation of the PQM Indonesia program was delayed during the first quarter of FY16 due to the complicated process of project registration with the Ministry of Finance (MOF) under the auspices of the USG-GoI Assistance Agreement for all USAID portfolio partners. BPOM, PQM Indonesia's main ministerial partner, was unable to fully participate in planned activities until full compliance with the MOF's reporting and registration requirements were met.

The Nigerian, Kazakh, Regional Development Mission for Asia (RDMA), and Thai programs experienced delays due to budget constraints and issues with financial infrastructure. In Nigeria, in lieu of a functional bank account that would facilitate easy access to program funds, time-consuming bank transfers negatively affect the execution of planned activities. An FY16 work plan has not yet been developed for Kazakhstan due to the MOH's funding delay. The USAID Mission and the Kazakh MOH agreed on potential co-funding of PQM projects in the country. However, MOH has not provided funds to date and all potential activities are on hold. The reduction of funding from the President's Malaria Initiative (PMI) and USAID remains a formidable challenge for maintaining the minimum program activities in the RDMA region. The lack of funding available for a local consultant based in Thailand has led to a communication gap between PQM and Thai program partners, such as the MOH, Bureau of Vector-Borne Disease Control, Bureau of Drug and Narcotics, and FDA.

Low price points have disincentivized the production of some essential medicines that are costly to produce. This is the case for African manufactured Amoxicillin dispersible tablets to treat tuberculosis. The Amoxicillin production requires dedicated manufacturing facilities to mitigate cross-contamination, which has led to a shortage of African manufacturers with the appropriate facilities to manufacture this beta-lactam product. If local production is to ever reach the scale necessary to support local demand, additional capital investment will be needed to support African pharmaceutical manufacturers. Similarly, a limited number of NTD medicines are currently manufactured around the globe due to less attractive market values of the product though demand remains high. For example, there are limited suppliers of Praziquantel (PZQ API) to treat schistosomiasis, and during the reporting period, the implementation of one of the potential suppliers of has been reported as non-compliant for GMP, creating a huge shortage in the supply of the product.

Tenuous geopolitical and emergency conditions have impacted programs in West Africa, Ethiopia, Burma, Pakistan, and Thailand. Due to the Ebola crisis, PQM was unable to travel to Guinea and Liberia though programs continued with remote support. Repair of Shimadzu equipment in Ethiopia remains a challenge due to US Government sanctions against Sudanese owned companies, which are the official Shimadzu representatives in Ethiopia. Additionally, power cuts in the Ethiopian office have become a challenge in recent times. The political landscape in Burma posed challenges to timely implementation of program activities as the political transition to the newly formed government comes underway. In Pakistan, a delicate political situation restricts institutional capacity. The unstable political

situation in Thailand continues to pose a challenge for the program to effectively work and collaborate with key partners at the management and technical levels, as they remain uncertain about their current position and responsibilities that could be changed at any point in time.

Finally, a lack of skilled human resources has been reported as a hindrance to implementation in Mozambique, Cambodia, and the Philippines. In Mozambique, test results are delayed as staff are unable to manage the volume of samples received in the lab on a regular basis. Limited competent technical staff at the National Health Products Quality Control Centre (NHQC) in Cambodia led to delays in the development and revision of SOPs, which in turn affects NHQC lab progress in implementing the roadmap set for ISO/IEC 17025 accreditation for NHQC-Cambodia. There is a high turnover of Philippines Food and Drug Administration (FDA) and the Local Government of the Philippines (LGU) staff at sentinel sites; the new staff must be trained and existing staff also need to be retained on the TB medicine sample collection and testing protocol. There is also an inadequate number of field office staff to oversee the performance of all sentinel sites, including attendance and participation to meetings and workshops from the TB program partners.

## 4) LESSONS LEARNED

Various PQM programs shared lessons learned during the first quarter. The lessons facilitate enhanced collaboration, which enables PQM's work to expand its breadth and depth. In addition, some lessons offer transferrable processes to other PQM programs, as well as to the organization as a whole. The lessons learned involve leveraging strategic partnerships among a multitude of stakeholders as the fight against poor quality medicines can only be won with cooperation across all sectors.

The PQM Indonesia program capitalized on its own ability as a key strategic intermediary between the National Agency of Drug and Food Control (BPOM), Ministry of Health (MOH), and WHO, as partners in the High Level Decision Maker meeting on WHO PQ, in coordinating the dissemination of relevant BPOM data with stakeholders, as well as advocating the development of policies to ensure harmonization of data collection and sharing between MOH and BPOM. The Indonesian program also recognized understanding the roles of various players within the disease control context as a crucial component to PQM Indonesia's ability to identify key areas for strategic intervention, as well as leveraging funds to support the program, as was the case for the Global Fund. Conversely, a number of delays could have been offset through enhanced coordination among the disparate Ministries involved in the financial and programmatic registration procedures under the USG-GoI Assistance Agreement.

A lesson learned from the Pakistani program arose not from strategic partnerships but rather how to deal with partners strategically. A PQM country situation assessment report outlined a number of difficulties and was circulated to various stakeholders. The lesson learned is to first communicate with the department concerned before sharing challenges with other stakeholders. The Pakistani experience also underscores the importance of extending communications to peripheral, yet key, partners. PQM assistance focused primarily on supporting DRAP capacity, which detracted from PQM's relationship with the ministry overseeing DRAP, as well as the national government as a whole. Greater systemic government support would boost PQM's position in the country. The Pakistani experience emphasizes the importance of defining roles among partners engaged in similar activities at different levels. Due to the lack of effective coordination and communication among partners, there exists a perception that there exists duplicative effort and confusion among the concerned circle. The Pakistani program therefore plans to increase its effort to engage all key government agencies, including the Ministry of National Health Services, Regulations & Coordination (NHSR&C), and others, along with the relevant authority as a step to build notoriety and support among government partners. With heightened emphasis in clearly defining roles and responsibilities, PQM is currently organizing a national chlorhexidine (CHX) Project Technical Working Group with a vast array of members. PQM's efforts to carefully organize the group's roles and responsibilities will strengthen its efforts toward a common goal.

Ingenuity and strategic partnership prevailed despite the Ebola outbreak when PQM managed to bring law documents under review by the Guinean National Medicines Regulatory Authority (DNPL) through the assistance of partners on the ground. Another strategic partnership led to a novel collaboration when PQM partnered with Nigerian universities in order to support the development of skilled professionals by reviewing the curriculum for faculty of pharmacy and chemistry. However, the partnership was stalled due to logistical issues until PQM coordinated the Pharmaceutical Council of Nigeria (PCN) to host the review, thus leveraging a better suited partner to achieve a common goal. In the area of drug research in the development of Praziquantel (PZQ) and the ground-breaking assessment report on the Malawian national regulatory agency (PMPB), a lesson gleaned is that PQM can act as a driver of knowledge, which has a multiplicative effect on implementing partners' capacity.

The MQM activities in Cambodia have transitioned from PQM program funding to outside sources. The cessation of PQM funding has caused the majority of MQM activities to be

postponed. The lesson learned is how to best conduct transitions by phasing-out MQM activities gradually so that governments can collectively plan better and have quality assurance mechanism in place.

The activities related to WHO PQ require substantial investments and high commitment from the top management of the manufacturer. PQM's experience in prequalification indicates that to provide further technical assistance, PQM needs certain evidence that the manufacturer is highly committed to the project, understands WHO and GMP requirements, and is ready to complete required investments.

## 5) SUSTAINABILITY

PQM strives to embed sustainability in its programming in hopes that systems will be strengthened to the point that they may one day be self-sustaining. Sustainability in this context is defined as the set of physical resources, processes, and regulations that enable an institution or program to operate in compliance with its mandate through financial resources generated in the course of its duties, and/or continuously provided by the system or organization to which it belongs or serves. PQM programs shared examples of sustainability efforts and successes incurred during the quarter.

Efforts aimed at government and regulatory agencies made up the majority of PQM sustainability progress. The Ghanaian Food and Drug Administration (FDA) displayed competence in sustaining key functions, such as procuring reference standards, maintaining its equipment, using funds to carry out post marketing surveillance, and improving its quality management system for the drug enforcement directorate. The PQM program in Burma is developing its human resource capacity of Department of Food and Drug Administration (DFDA) Nay Pyi Taw laboratory through advanced trainings so that their technical expertise and analytical skills are substantially improved. PQM's technical assistance towards ISO 17025 accreditation of DFDA Nay Pyi Taw laboratory will ensure that all the analytical work conducted by the laboratory are of highest standards and will continue to deliver results even without PQM's assistance. The PQM program's aim in Cambodia is building the long lasting human resource capacity of Department of Drugs and Food (DDF) and National Health Products Quality Control Centre (NHQC) through trainings so that their regulatory and technical expertise and skills are substantially improved. In Guinea, improving regulatory authority law documents has helped the regulatory authority to exercise its functions and maintain sustainability.

The Indonesian PQM work plan has been developed based on the needs of the line Ministry (BPOM) and MOH as identified in their annual plans. By harmonizing within the identified priority areas of the government strategic plans, the PQM program goals and long-term sustainability can be achieved. The PQM Indonesia program activities are designed to complement and support the main activities of the government (under national budgets), and therefore have a greater impact and longer effect than if simply designing parallel systems or designing interventions that may not be in line with government strategies. Also, by promoting both technical capacity with advocacy for policy change, PQM Indonesia is focused on maintaining long-term prioritization of quality assurance of medicines within the government system. By ensuring that the government leans in the direction of requiring international standards for their procurement and national tenders, for example, there will be far-reaching positive consequences of increasing the availability of quality-assured medicines in the public markets.

In order to move forward and to attain sustainability of achievements in Pakistan, it is imperative to expand PQM's working relationship with the government at different levels and partners to ensure that staff turnover does not affect the program. Ministry of National Health Services, Regulation & Coordination (NHSR&C) is the parent department that is likely to remain even with change of governments. As the parent department of DRAP, it is responsible to make policies for DRAP and gives direction to the authority for implementation. The Secretary of the Ministry is the Chairman of Policy Board that is the supra body of DRAP and has the authority under the law to make policies. It is a fair consideration that PQM will be better equipped to move activities forward with the help of the Secretary Ministry and NHSR&C. The Ministry is also responsible for coordination with provinces on health-related issues, including quality of drugs. It is also important that the program for Mother & Child Health runs under the ministry including the program for reduction of Neonate Mortality.

A Department Order (DO) among PQM, Regional Offices (ROs), Local Government Units (LGUs) and Department of Health agencies such as, Food and Drug Administration (FDA), Disease Prevention and Control Bureau (DPCB), National TB Program (NTP) and

Pharmaceutical Division (PD) will be created in order to sustain the MQM program in the Philippines. This includes sharing costs and propelling country ownership at the project's end in 2019. The FDA shall officially turnover the ownership of the Minilab$^{TM}$ kits to the Directors of ROs and will issue the corresponding MOU. The respective ROs shall be responsible for the full utilization and maintenance of the Minilab$^{TM}$ kits after 2019.

PQM is supporting the collaboration between the OMCLs in LAC (Colombia and Peru) and the GPHF to facilitate inclusion of the new protocols that countries are developing for their own needs in the GPHF-Minilab$^{TM}$. Countries' activities will have a global impact though the sustained availability of documented methods and physical standards (reference medicines).

The RDMA has been building the long lasting human resource capacity of medicines regulatory agencies by way of strengthening the QC labs through scientific and technical trainings and advocacy so that their technical expertise are substantially improved. PQM's TA towards ISO 17025 accreditation and/or WHO PQ of Chula PTSC in Thailand and the Food and Drug Quality Control Center (FDQCC) in Laos will ensure that all the analytical work conducted by the laboratories are of highest international standards and practices. Similarly, the regional training workshop on pharmaceutical supply and distribution chains for inspectorates conducted in Laos for regulators is likely to further enhance and eventually sustain the region's capacity that may be rolled out on a national level. This course has already been adapted by the Cambodian MOH/DDF with support of WHO to conduct a national training for inspectors in the whole country.

In the area of laboratory sustainability, PQM has achieved sustainability progress in various programs. Ethiopia has been instrumental in the support of equipment maintenance activities since 2010 by contracting consultants. At present, PQM provides capacity building and skill building in order to prepare EFMHACA to assume full responsibility. Currently, EFMHACA has already assumed the costs of maintenance activities and has entered an agreement with a vendor for future maintenance of its lab equipment. PQM's TA towards ISO 17025 accreditation of the Cambodian NHQC laboratory will ensure that all the analytical work conducted by the laboratory are of highest standards and will continue to deliver results even without PQM's assistance. In order to strengthen and sustain the capacity of FDA and its Satellite Laboratories, PQM Indonesia is extending its assistance to evaluate the QMS of FDA Satellite Laboratory in Mindanao for ISO/IEC 17025 accreditation. The staff previously trained for the ISO/IEC 17025 accreditation of the FDA Central Laboratory based on Metro Manila will now act as the trainers for the staff in Mindanao. PQM supports the FDA training team in order to train more trainers and sustain the training mechanism at FDA through refresher training courses, workshops, and echo-seminars. PQM's support to Ethiopian EFMHACA branch labs has enabled the labs to independently conduct PMS, thus significantly impacting country-wide quality control. Finally, PQM is developing a framework for risk-based PMS aimed at easing the burden on quality control and inspection services in supported countries to assist them to carry out activities in efficient and sustainable ways.

In manufacturing sustainability, PQM provides guidance on manufacturing medicines of high quality from which the manufacturers can branch out their knowledge to other products in their portfolio. By building this capacity, the manufacturers can provide high quality medicines in their region, in their countries, and eventually globally.

## 6) MANAGEMENT OVERVIEW

The start of the first quarter of FY16 was marked by the PQM Global Retreat, which was held from October 19–23, 2015. The theme of the 2015 PQM Global Retreat was *Exceed the Vision, Expand the Possibilities*, and 73 individuals from 11 countries participated in the event. The retreat provided a platform for PQM members, USAID representatives, and USP's executive team to deliberately reflect upon the program's sustainable public health contribution around the world. As a result of the week's discussions on Operational, Programmatic, Technical, and Monitoring and Evaluation Excellence, a plan for concrete action items was developed. Following the retreat, progress has been made in all of the outlined areas for action. Some of which include the development of the PQM Results Framework with Level 1 and Level 2 indicators for monitoring and evaluation, development of competency mapping and training on PQM technical approaches, development of PQM website, and the recruitment of field office operations manager to serve as the single point of contact for the country offices.

During the first quarter the PQM Director, Jude Nwokike represented the program at several international meetings including:

- Joint WHO-UNICEF-UNFPA Meeting with pharmaceuticals and diagnostics manufacturers and suppliers. 23–26 November 2015, UN City, Copenhagen
- The 6th Pharmaceutical Manufacturing Plan for Africa (PMPA) Technical Committee Meeting, Addis Ababa, Ethiopia. 26-27 November, 2015
- 2nd International consultation of experts on Regulatory Systems Strengthening, held December 2-4, 2015

Director, Jude Nwokike, also visited USP-PQM field offices in Ethiopia and Nigeria and met with USAID Mission counterparts. His trip concluded in the signing of an MOU with Dong-A ST pharmaceutical company in the Republic of Korea. Mr. Nwokike's temporary duty helped to strengthen existing relationships, craft new partnerships, and promote the PQM program to a global audience.

Staff recruitment was a top management priority during FY16 Q1. Offers were extended and accepted for the following six positions:

- Manager, Core & CIS
- Capacity Development and Instructional Design Manager
- Supervisor & Senior Program Coordinator
- Program Coordinator, Technical
- Program Coordinator, Asia & Latin America
- Program Coordinator, Africa

These new staff will play crucial roles in the PQM organizational structure, particularly to support the achievement of the Work Planning and Implementation Lifecycle Approach and the implementation of best practices and systems for a responsive, reliable, and result-oriented program. A new organizational chart was developed to reflect these additions to the program, and updates to roles and responsibilities for PQM staff will be shared.

Early promising results are being noted with the changes already introduced. As at end of Q1, about 45% of the FY16 activities work plans have been approved by USAID. The required program and financial reporting are submitted timely, and guidance has been provided to build in sustainability approaches into the implementation of interventions to ensure the development of resilient quality assurance systems. The PQM objectives and technical approaches increasingly resonates with in-country government and other partners in pharmaceutical quality assurance; in Indonesia, government funds will support a new laboratory built to international standards and the Global Fund is committed to supporting the

BPOM labs through PQM technical assistance. Also opportunities for field support continue to arise in addition to the existing in-country presence in four countries and programs in 34 countries; during the quarter the USAID mission in Malawi funded an assessment of the Malawi Pharmacy Medicines and Poisons Board. The PQM program continues to advocate to governments and other partners to invest their own resources towards quality assurance and also lead efforts at defining pathways towards sustainability.