



# Promoting the Quality of Medicines (PQM)

**Annual Report on Activities  
for October 1, 2012 – September 30, 2013**

**Submitted October 25, 2013**

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## USAID OBLIGATIONS FOR PQM ACTIVITIES

Implemented October 1, 2012 – September 30, 2013

The complete list of obligations and the funding pipeline will be sent as a separate document.

\$4,430,000	Core funding
\$2,025,000	Sub-Saharan Africa
\$2,350,000	Southeast Asia Region
\$876,301	Europe and Eurasia
\$600,000	Latin America and the Caribbean
<b>\$10,281,301</b>	<b>Total obligated</b>

## WHERE PQM WORKS

October 1, 2012 – September 30, 2013

<b>Africa</b>	Burundi, Ethiopia, Ghana, Kenya, Liberia, Mozambique, Nigeria, Senegal, Tanzania
<b>Asia</b>	Burma, Cambodia, China, India, Indonesia, Laos, Nepal, Philippines, South Korea, Thailand, Vietnam
<b>Europe/Eurasia</b>	Kazakhstan, Russia, Ukraine
<b>Latin America and Caribbean</b>	Bolivia, Brazil, Colombia, Ecuador, Guatemala, Guyana, Peru, Suriname

## Promoting the Quality of Medicines (PQM) Program

### PROGRAM BACKGROUND AND FRAMEWORK

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. During 2000–2009, this partnership operated as the USP Drug Quality and Information program; then, to better meet growing global needs, USAID awarded USP a five-year, \$35 million cooperative agreement to establish a new, expanded program—**Promoting the Quality of Medicines (PQM)**. 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. In September 2013, USAID extended the PQM cooperative agreement through September 2019 and increased the budget ceiling by \$75 million, for a total program ceiling of \$110 million.

The PQM program is USAID's response to the growing development challenge posed worldwide by substandard and counterfeit medicines (SCMs). Their availability is increasingly recognized as a serious public health threat, especially in low- and middle-income countries. SCMs 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 manages a number of activities that reflect a systems-based approach which enables countries to address the problem of SCMs in a comprehensive, systematic, and sustainable manner, as illustrated in the objectives reported below.

#### I. Build capacity and strengthen quality assurance (QA) systems

PQM provided technical assistance to 31 countries in FY13, strengthening their national capacity in quality assurance and quality control systems in efforts to combat the availability of substandard and counterfeit medicines. One approach PQM has employed is helping national quality control laboratories (NQCLs) operate with good laboratory practices and become ISO/IEC 17025:2005 accredited or WHO prequalified, both globally recognized standards of proficiency. In FY 13, PQM assisted seventeen NQCLs in Africa, Asia, and Europe/Eurasia. The NQCL of Thailand achieved WHO prequalification this year, and several labs have ISO/IEC 17025:2005 accreditations or re-accreditations pending.

Often the first measure PQM introduces in a country, depending on its needs, is to help establish post-marketing surveillance in the form of a system of medicines quality monitoring (MQM). This enables national and international stakeholders to adopt a comprehensive approach that leads to the collection of evidence-based data. The MQM process has proven to be of strategic importance in countries where medicines quality assurance systems are weak by allowing the country's medicines regulatory authority (MRA) to act should SCMs be discovered. Through MQM, improving the technical capacity of NQCL staff through training and internships, and installing registration software, PQM provides needed support for countries to better control medicines quality and encourages MRAs to take enforcement actions based on results.

PQM has helped establish and develop medicine quality monitoring activities in 21 countries to date. Through these programs, PQM has helped identify counterfeit and substandard antimalarial, anti-tuberculosis, obstetric, and neonatal medicines in Burma, Cambodia, Ghana, Guatemala, Indonesia, Kenya, Liberia, Laos, Philippines, Senegal, Suriname, Thailand, and Vietnam.

To address strengthening Quality Assurance/Quality Control (QA/QC) systems in a systematic manner, PQM introduced the “Three-level Approach” for screening medicines; each level in this approach consists of different QC procedures, which increase in complexity and complement the previous levels. As of the end of FY13, four countries (Colombia, Ecuador, Guyana, and Peru) working with PQM through the Amazon Malaria Initiative have institutionalized this approach, while another (Guatemala) is in the process of doing so.

## **II. Help increase supply of QA medicines**

In cooperation with the World Health Organization (WHO) and Global Drug Facility (GDF), in FY13 the PQM program conducted three workshops (in Indonesia, Ghana, and Brazil) to inform manufacturers of anti-tuberculosis (TB) medicines how to produce quality-assured medicines by following good manufacturing practices. The workshops explained the WHO Prequalification Program, raised interest in participating, and described how PQM can help in the process. At the beginning of FY13, PQM was working with 30 manufacturers in 8 countries toward achieving WHO Prequalification status—auditing facilities, offering guidance to prepare dossiers, and providing technical assistance to bring manufacturing systems in line with WHO standards. By the end of FY13, PQM was working with 35 manufacturers in 11 countries. Notably, two anti-TB medicines became WHO Prequalified with assistance from PQM this year: Dong-A’s Cycloserine finished pharmaceutical product, and Zhejiang Second Pharma’s Isoniazid active pharmaceutical ingredient.

PQM also provides technical assistance to manufacturers of essential medicines for maternal and child health to improve their GMP compliance. Zinçant<sup>®</sup> 20 mg dispersible tablets, produced by Nutriset/Laboratoire Pharmaceutique Rodael for managing diarrhea in children, achieved WHO Prequalification status this year, with assistance from PQM. Furthermore, as a member of the technical working groups of the UN Commission on Life-saving Commodities, PQM plays a key role in providing quality assurance support for manufacturers of medicines for maternal and child health.

Through its work on GMP, PQM has strengthened its relationships with WHO, GDF, and UNICEF and expanded its role in preparing manufacturers medicines for WHO Prequalification.

## **III. Combat counterfeit and substandard medicines**

PQM takes every opportunity to raise its profile in advocating for quality medicines and to raise public awareness of the importance of quality-assured medicines to the public health. PQM staff participated in several conferences, speaking about the importance of medicines quality and the global public health implications of substandard and counterfeit medicines. Dr. Lukulay, PQM’s director, also served as a member of the committee that drafted the study, “Understanding the Global Public Health Implications of Substandard, Falsified, and Counterfeit Medical Products” published by the Institute of Medicine in February 2013. USP promotes PQM programs through press releases (5 this year) and coordinating media interviews; for example, Voice of America’s TV2Africa interview with Dr. Lukulay regarding the joint Ghana Food and Drug Administration and PQM study on the quality of oxytocin and ergometrine medicines used during and after childbirth. PQM leadership uses every speaking engagement and media interview—local, national, and international—to drive home the message of the importance of medicines quality to successful treatment outcomes.

Each PQM country program includes activities to raise public awareness about SCMs. Some are just getting started, whereas others, such as those in the Greater Mekong Subregion, have developed some sophisticated methods to get the word out. For instance, PQM and partners finalized the documentary “Pharmacide: Mekong” and screened the film at the “Pharmacide Arts and Documentary Film on Counterfeit Medicines Exhibition” in Bangkok, Thailand; the event was attended by approximately 20,000 people.

#### **IV. Provide technical leadership**

PQM advocates globally, nationally, and locally for the importance of quality assurance of medicines to the effectiveness of treatment regimens. In several cases, MRAs have taken corrective action. In Kenya, for example, the Pharmacy and Poisons Board confiscated failed quinine found during MQM, and in Liberia, more than 20 regulatory actions were taken by the LMHRA. In Cambodia, the Inter-Ministerial Committee removed the registration numbers of products that failed quality testing and subsequently banned all product registrations from the manufacturer in question.

Among the challenges to sustaining MQM in countries with limited resources is the expense required to monitor and test medicines quality on a routine basis, particularly in more geographically remote areas and along borders. PQM introduced testing using the Global Pharma Health Fund Minilab<sup>®</sup> in 2005 because of its portability and ease of use, and continues to research other tools that may improve the accuracy and reliability of field-based quality control technology. In FY13, in conjunction with Boston University, PQM supported development of a new detection technology based on microfluidics. “PharmaCheck” is considerably smaller and more transportable than the Minilab<sup>®</sup> and, as testing requires less reference sample, should lower the cost of testing. A design firm has been identified, and a field-ready prototype is expected to be ready before the end of 2013.

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## ACRONYMS

AMRH	African Medicines Regulatory Harmonization
ANEQAM	Asian Network of Excellence in Quality Assurance of Medicines
API	Active Pharmaceutical Ingredient
ASEAN	Association of Southeast Asian Nations
ATB	Anti-tuberculosis
BA	Bioavailability
BE	Bioequivalence
BINFAR	Pharmaceutical and Medical Production and Distribution Services
BREMERE	Building Regional Expertise in Medicines Regulation, Information-sharing, Joint Investigation, and Enforcement
CAPA	Corrective and Preventive Action
CAP-Malaria	Control and Prevention of Malaria
CDC	U.S. Centers for Disease Control and Prevention
CHD	Center for Health Development
CHX	Chlorhexidine
CRO	Contract Research Organization
DAV	Drug Administration of Vietnam
DDF	Department of Drugs and Food
DF	Pharmaceutical Department
DOH	Department of Health
DOMC	Division of Malaria Control
DPM	Direction de la Pharmacie et des Medicaments
DQI	Drug Quality and Information Program
FDA	Food and Drug Administration or Authority
FDB	Food and Drug Board
FDC	Fixed Dose Combination
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FPP	Finished Pharmaceutical Product
GCP	Good Clinical Practices
GMP	Good Manufacturing Practices
GMS	Greater Mekong Sub-region
HCMC	Ho Chi Minh City, Vietnam
IMC	Inter-Ministerial Committee
INSP	National Institute of Public Health
IPT	Inter-laboratory Proficiency Testing
LAC	Latin America and the Caribbean
LGU	Local Government Unit
LMHRA	Liberian Medicines and Health Products Regulatory Authority
LNCM	National Laboratory for Medicine Quality Control
MDR-TB	Multi-Drug Resistant Tuberculosis
MOC	Memorandum of Collaboration
MOH	Ministry of Health
MQCL	Medicines Quality Control Laboratory

MQDB	Medicines Quality Database
MQM	Medicine Quality Monitoring
MRA	Medicines Regulatory Authority
MSH/SIAPS	Management Sciences for Health/Systems for Improved Access to Pharmaceuticals & Services
MSH/HCSM	Management Sciences for Health/Health Commodities and Services Management
NA-FDC	National Agency of Food and Drug Control
NHQC	National Health Products Quality Control Center
NIDQC	National Institute for Drug Quality Control
NIMPE	National Institute for Malariology, Parasitology and Entomology
NOMCOL	Network of Medicines Control Laboratories
NQCL	National Quality Control Laboratory
NTP	National Tuberculosis Program
OI	Opportunistic Infection
OMCL	Official Medicines Control Laboratory
ORS	Oral Rehydration Salts
PAC	Provincial AIDS Committee
PAHO	Pan American Health Organization
PEPFAR	President's Emergency Plan for AIDS Relief
PIC/S	Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme
PMI	President's Malaria Initiative
PNILP	Programme National Intégré de Lutte contre le Paludisme
PPB	Pharmacy and Poison Board
PQ	Prequalification
PQAD	Product Quality and Assessment Directorate
PQM	Promoting the Quality of Medicines Program
QA	Quality Assurance
QC	Quality Control
QMS	Quality Management System
RDMA	Regional Development Mission for Asia
SL-ATB	Second-Line Anti-Tuberculosis
SOP	Standard Operating Procedure
SSFFC	Substandard/spurious/falsely-labeled/falsified/ counterfeit
TA	Technical Assistance
TAP	Technical Assistance Program
TB	Tuberculosis
TWG	Technical Working Group
UCAD	University of Cheikh Anta Diop
UN	United Nations
USAID	United States Agency for International Development
USP	United States Pharmacopeia
WB	World Bank
WHO	World Health Organization



## SUMMARY REPORT ON ACTIVITIES

October 1, 2012–September 30, 2013

The following is a report on the background of each of PQM's various funding streams, key activities carried out during this fiscal year, and challenges encountered during implementation of activities. This section includes information on Core Funding first and, thereafter, is organized by geographical region: Africa, Asia, Europe and Eurasia, and Latin America and the Caribbean.

### Core Funding

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#### COMMON AGENDA

##### Background

In order to play a technical leadership and advocacy role, and to be in a position to influence national and international medicines quality assurance agendas, PQM plans to attend selected international meetings and participate in the design of proposed activities relating to medicine quality issues. PQM also produces up-to-date information about current issues in medicines quality. In an effort to improve tools to ensure quality control and increase the knowledge base about quality assurance, PQM will develop a field-based quality control tool with increased accuracy, sensitivity, and reliability.

##### Key Activities

#### **Increase awareness about the importance of medicines quality**

Over the course of the year, PQM staff participated in several conferences, speaking about the importance of medicines quality and the global public health implications of substandard and counterfeit medicines. Through Common Agenda funding, staff attended and presented at international and domestic conferences for audiences from Equatorial Guinea, China, Nigeria, Korea, the United States, and others. Dr. Lukulay also served as a member of the committee that drafted the study, "Understanding the Global Public Health Implications of Substandard, Falsified, and Counterfeit Medical Products" published by the Institute of Medicine in February 2013.

In addition, USP helped PQM increase awareness about the importance of medicines quality through press releases, social media updates, and media interviews, including those for the Voice of America, the Maternal Health Channel of Ghana, and the Care2 News Network.

#### **Produce up-to-date information about current issues in medicines quality**

On PQM's website, a total of 28 new articles, 39 photos, and 12 new or updated resources were added this fiscal year. In addition, 106 new reports were included with the *Media Reports on Medicine Quality*, which averaged more than 1,110 hits each month.

#### **Support Regional Approaches & Networks**

This year, Dr. Smine attended two meetings of the New Partnership for Africa's Development (NEPAD) African Medicines Regulatory Harmonization (AMRH) Technical Working Group (TWG). The revised criteria for establishing Regional Centers of Regulatory Excellence in Africa and a related pool of regulatory experts were issued; Dr. Smine reviewed the drafts, which were subsequently approved by the NEPAD/AMRH director.

#### **Explore improved tools to ensure quality control or increase the knowledge base about QA**

The field-ready, robust prototype of PharmaCheck is being developed with the help of FIKST design firm, based in Boston. A prototype is expected to be delivered by mid-November 2013.

Probes for artesunate, coartem, sulfamexazole, and tetracycline continue to be further optimized and tested for their stability.

## Challenges

The main challenge for PharmaCheck development is obtaining sufficient funds to begin pilot field testing and potential expanded field testing, as well as ensuring that PharmaCheck units are available.

## **MALARIA**

### Background

PQM has provided support for the President's Malaria Initiative (PMI) objectives using core funds by developing public standards to test existing medicines where standards did not exist before. PQM then established a network of country quality control laboratories to teach chemists about the use of the standards in compliance with Good Laboratory Practices standards. More recently, PQM has been involved in obtaining information at country levels on the extent of diversion of malaria medicines from the public to the private sector. The information obtained will be used by the respective donors to identify risk areas for diversion and take the necessary actions to address the problem.

### **Conduct studies to assess the diversion of antimalarial medicines from public to private sector**

PQM conducted studies in three African countries (Congo Brazzaville, Uganda, and Liberia) to assess the extent of diversion of USAID procured medicines from the private to the public sectors. In all the countries studied, USAID-procured Coartem<sup>®</sup> were identified in the private market and concluded to have been diverted from the public sector. The findings were shared with USAID and the PMI team.

### **Conduct follow-on study of Liberian market for prevalence of artemisinin-based monotherapies**

The study protocol for Liberia was finalized by partners, and the study began in January 2013. However, at the request of USAID, the study was discontinued.

### **Develop monograph for Dihydroartemisinin-Piperaquine (DHA/PP) Fixed Dose Combination (FDC)**

After PQM obtained the approval from the innovator company, the active pharmaceutical ingredient (API) was characterized, and analytical methods were developed and verified. The monograph for DHA/PP was published in the USP Medicines Compendium.

### **Develop Minilab<sup>®</sup> methods for DHA/PP FDC**

PQM obtained the API and developed the Minilab methods for DHA/PP FDC. The methods were published in the Minilab<sup>®</sup> manual.

### **Conduct Quality Control (QC) tests on antimalarials from developing countries**

PQM tested artesunate samples that were suspected to be substandard for USAID/Ghana. The samples were found to comply with pharmacopeial specifications, and the findings were shared with USAID/Washington and USAID/Ghana.

## Challenges

Sometimes there are delays in the development of monograph and Minilab<sup>®</sup> methods because the products are not readily donated to USP laboratories by innovator companies.

One of the key lessons learned from the monotherapy study attempt in Liberia is to quickly notify PMI-Washington when issues are encountered and seek guidance. Working with missions, at times, presents challenges of alignment with Core program expectations and budgets.

## **MATERNAL AND CHILD HEALTH**

### Background

Since 2009, PQM has been involved in the efforts of the World Health Organization (WHO), UNICEF, and USAID to roll out zinc salts as an oral rehydration salt supplement in the management of children's

diarrhea, especially for those children under the age of five. In order to help ensure that quality zinc and other maternal and child health (MCH) products, such as chlorhexidine, can be procured in developing countries, PQM performs Good Manufacturing Practices (GMP) assessments of manufacturers to ensure that their products are of high quality. In order to help manufacturers achieve WHO prequalification (PQ) status, PQM provides recommendations to strengthen their quality assurance systems and GMP programs.

#### Key Activities

##### **Support selected United Nations (UN) Commission medicine manufacturers**

PQM conducted baseline GMP assessments of chlorhexidine gel manufacturers in Nepal and Madagascar. In addition, chlorhexidine samples received from Nepal and India manufacturers were tested, and a report was disseminated. Lomus Pharmaceutical has agreed to perform technology transfer for chlorhexidine gel to Nigerian manufacturers selected by PQM and PATH.

##### **Support selected zinc manufacturers for local procurement**

A GMP assessment of an Indian manufacturer was conducted for the manufacture of zinc sulfate tablets, and PQM also continued to support three zinc manufacturers in Africa. In addition, PQM provided technical assistance to Chi Pharmaceuticals in developing a required palatability study for zinc sulfate tablets. The study was completed in Q4 and will be included in the company's WHO submission.

#### Challenges

Some manufacturers are reluctant to make the necessary financial commitments to improve infrastructure needed for GMP compliance.

## **TUBERCULOSIS (TB)**

#### Background

PQM provides support to the Global Drug Facility and the Green Light Committee in their efforts to increase the availability of good quality second-line anti-TB medicines (SL-ATBs). Since FY09, PQM has assisted SL-ATBs manufacturers to ensure an increased supply of quality-assured medicines globally.

#### Key Activities

##### **Increase the supply of quality-assured second-line TB medicines**

One finished pharmaceutical product (FPP) company (Dong-A Pharmaceutical, Cycloserine 250 mg, November 2012) and one active pharmaceutical ingredient (API) company (Zhejiang Second Pharma, Isoniazid, September 2013) were prequalified with technical assistance from PQM.

Four API Master File submissions and four FPP dossier submissions were accepted for review by WHO PQ with assistance from PQM. Three API and one FPP facility inspection reports were published by WHO – these inspections were successful with the assistance of PQM mock audits.

Three workshops were held this fiscal year – one in Indonesia, one in Ghana, and one in Brazil. The Indonesia and Brazil workshops were held using the CPHI platform in which PQM was able to hold half-day seminars discussing the WHO PQ process and PQM's technical assistance. The workshop in Ghana was a full-day workshop.

PQM GMP staff attended meetings sponsored by WHO PQ in Geneva and Copenhagen. The attendees were able to discuss questions from the manufacturers and the PQ process in detail.

In addition, Minilab<sup>®</sup> methods for Clarithromycin, Kanamycin, Ofloxacin, PAS, Amikacin, Capreomycin, and Streptomycin were developed and published this year.

### **Reduce the prevalence of substandard and counterfeit SL-ATB medicines**

USP monographs for Terizidone and Prothionamide are still in progress, and quality monitoring for SL-ATB medicines is also in progress.

### **Develop the API bank concept and engage FPP manufacturers**

Two manufacturing companies (one for Capreomycin and one for Kanamycin) have been assessed for GMP compliance and are in the process of compiling dossiers to submit to WHO PQ.

#### Challenges

Manufacturers are competing to be the primary supplier to GDF. If an API manufacturer also manufactures FPP, the manufacturer is often not willing to sell the API to another manufacturer because of worries about competition.

## **Africa**

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### **BURUNDI**

#### Background

PQM was selected to provide technical, strategic, and operational assistance to strengthen medicines quality assurance in Burundi, beginning in 2012. PQM was asked to propose interventions that will help ensure the adequate quality of antimalarial medicines in the country.

#### Key Activities

##### **Develop interventions to ensure the quality of antimalarial medicines**

PQM conducted a quick gap analysis of the pharmaceutical quality systems in Burundi just prior to the Roll Back Malaria partners meeting in January so that the results of the analysis could be discussed at the meeting. After meeting with relevant stakeholders, recommendations on targeted interventions were proposed to the USAID/PMI team for their consideration.

##### **Support the National Malaria Control Program (PNILP) in developing a quality assurance policy**

PQM gathered information from PNILP to develop a quality assurance policy (QAP) for antimalarial medicines and diagnostics. PQM is coordinating with PNILP to finalize the QAP.

##### **Develop an implementation plan for strengthening the quality control laboratory**

PQM developed a 3-year implementation plan for strengthening the analytical capacity as well as the quality management system of the National Institute of Public Health (INSP) quality control laboratory and shared it with INSP. Lab management provided feedback to PQM, and their recommendations were incorporated into the plan. INSP will share the implementation plan with USAID/Burundi and seek approval.

##### **Review the National Pharmaceutical Law**

The draft law was reviewed and comments and recommendations were communicated to the medicines regulatory authority (DPML) in May 2013. The recommendations included major changes including new clauses.

#### Challenges

The in-country process of reviewing the pharmaceutical law is stalled, and limited progress has been made to advance the law.

### **ETHIOPIA**

#### Background

PQM receives funding from the President's Emergency Plan for AIDS Relief (PEPFAR) through USAID/Ethiopia to strengthen the capacity of the Ethiopian Food, Medicine and Health Care

Administration and Control Authority (FMHACA). The Product Quality and Assessment Directorate (PQAD) laboratory of FMHACA, through the technical and financial support provided by PQM, obtained ISO 17025 accreditation with respect to seven tests in 2011.

PQM also receives funding from PMI to provide technical, strategic, and operational support to strengthen antimalarial medicines quality assurance in Ethiopia. In order to monitor the quality of the country's antimalarial medicines, a medicine quality monitoring (MQM) program has been established, and PQM has supported the program by providing training to technical staff on sampling, testing of medicine samples, evaluation of medicine quality, and other activities.

#### Key activities

#### **Strengthen FMHACA's management capacity based on findings from the gap analysis**

In 2012, two rapid assessments were carried out to identify main gaps in FMHACA, first by a private consultant recruited by PQM and later by the PQM Ethiopia Office. The two assessments highlighted the main weaknesses observed and recommended actions to be taken to improve the situation. Similarly, in 2013, another assessment was carried out by PQM covering the medicine and food registration and licensing system and made recommendations for improvement. The 2012 and 2013 reports were given to FMHACA management for follow up. PQM is awaiting an official response from FMHACA management.

#### **Strengthen FMHACA's registration and licensing system**

During FY13 PQM, the following support activities were carried out:

- GMP inspection service fee direct payment procedure for FMHACA was developed and provided to FMHACA for implementation
- Training on basic GMP principles was conducted for 40 participants from FMHACA and local pharmaceutical industries
- Training for 32 participants from FMHACA and the Ministry of Agriculture was conducted on basic dossier assessment
- Two staff from FMHACA were sent to Ghana for training on dossier assessment at CePAT
- In-house basic training on dossier assessment for fifteen new staff of FMHACA was conducted

#### **Support establishing a centralized FMHACA information/knowledge management system**

A concept paper for software development for information management for Medicine Regulation of Ethiopia was developed and submitted to FMHACA. The Authority agreed with PQM's initial plan, and PQM published a notice in the local newspaper inviting potential IT companies to submit their bids. Bid documents are now being analyzed by a committee.

#### **Support physic-chemical lab to maintain and expand the accreditation to other test methods**

PQM supported the Product Quality Assessment Directorate (PQAD) to build staff capacity and to maintain accreditation of seven test methods. Expansion of the accreditation to include other test methods could not be undertaken because the laboratory had to move from to a new building.

Following are the activities supported by PQM:

- Supported one PQAD staff to go to India for training on advanced analytical methods
- Provided technical assistance to FMHACA's quality control laboratory toward ISO 17025:2005 reaccreditation.
- Arranged in-house CAPA training for seven staff
- Three PQAD staff were sent for training to FHI's condom testing laboratory in Thailand
- Assisted the PQAD laboratory to participate in a proficiency testing program organized by the European Directorate for the Quality of Medicines and Health Care
- Trained 11 staff from FMHACA branch laboratories and PQAD laboratory on Minilab® techniques

- Trained 13 PQAD staff on compendia techniques of medicine analysis
- Arranged training on lab equipment maintenance for one PQAD staff in India
- Arranged training on equipment maintenance for 5 staff at the Shimadzu Laboratory in Japan
- Trained 9 new PQAD staff on Good Documentation Practices (GDP) and Karl Fisher Titration
- Supported the training of three staff in Thailand on microbiological food testing
- Purchased laboratory chemicals, supplies and reference standards for the FMHACA laboratory

### **Support FMHACA condom lab to become ISO 17025 accredited and WHO prequalified**

Three staff went to Thailand for training on condom testing. Other than this, there have been no activities carried out to move the condom lab towards becoming ISO 17025 accredited and WHO prequalified. The condom machines need to be moved into the new laboratory building at FMHACA and then installed and calibrated before initiating the accreditation process.

### **Strengthen FMHACA branch offices, enabling them to carry out post-marketing surveillance inspection activities**

An assessment of one branch laboratory was carried out, and the staff members were provided basic lab training; in addition some lab equipment was installed. Two branch laboratories were provided with Minilabs<sup>®</sup> to conduct quality monitoring, and 11 staff (from branch laboratories and PQAD main lab) attended training on Minilab<sup>®</sup> applications.

### **Support post-marketing surveillance of antimalarials**

A total of 248 samples of antimalarial medicines, consisting of quinine sulphate tablets, chlorquine phosphate tablets, artemether and lumefantrine tablets, primaquine sulphate tablets, mefloquine hydrochloride tablets, and artemether injections, were collected from six sentinel areas. Testing of the samples has been completed and a report is being written.

Results of past post-marketing surveillance studies were used to organize two workshops at Yabelo and Jijiga. The purpose of the workshops was to increase public awareness of the illegal trade of medicines and mobilize cooperation.

### **Support local opportunistic infection (OI) medicines manufacturers to become GMP compliant and get their OI products WHO prequalified**

PQM supported three staff from the local pharmaceutical industry to attend a training program on medicine registration, organized by CePAT, in Ghana. In addition, PQM assisted in developing a GMP Roadmap toward WHO prequalification for the local pharmaceutical industry.

### **Improve capacity and skills of local OI medicines manufacturers to ensure that their products and manufacturing sites comply with GMP**

PQM supported training of pharmaceutical industry staff in medicine registration in Ghana (organized by CePAT).

### **Monitor and evaluate program implementation**

No monitoring and evaluation has been conducted. Instead the funds allocated for this purpose were re-budgeted to organize two public awareness workshops, one in Yabelo and the second in Jijiga. During the workshops, findings from the antimalarial post-marketing surveillance were presented to participants.

### Challenges

Rapid assessments of FMHACA—carried out by an external consultant and by the PQM Ethiopia office—identified a number of critical gaps that affect FMHACA in meeting its mandates and offered recommendations to address the gaps/weaknesses. So far, measures have not been taken to address those gaps, and they remain a challenge. There is high staff turnover within FMHACA, in particular

regarding senior and experienced staff. Clearing laboratory supplies from customs takes time and remains a challenge.

## **GHANA**

### Background

PQM has focused on providing technical assistance to the Food and Drugs Board—now known as Food and Drug Authority (FDA)—to establish a functional medicine quality monitoring program throughout the country and to strengthen the capacity of the FDA's national quality control laboratory (NQCL) toward the goal of ISO 17025 accreditation and WHO prequalification.

### Key Activities

#### **Support post-marketing surveillance of antimalarials at existing sentinel sites, establish two additional sites, and encourage FDA to take enforcement actions based on the results**

The results of the fourth round of MQM testing were tabulated and a report generated and disseminated to the partners and USAID/CDC. The failure rate for antimalarials has dropped from a high of 18.0% in 2010 to 7.7% in 2012. Based on the confirmatory test results, all of the importers and manufacturers of the substandard products found during MQM have been ordered by the FDA to initiate an immediate product recall and submit a report to the FDA within 21 days.

Meanwhile the FDA Inspectorate Department and all 10 regional offices have been ordered to ensure that these substandard products are removed from the distribution channel. Most of these products have been detained by the FDA and will be safely destroyed soon.

The owner of the premises where counterfeit metakelfin tablets were purchased has been handed over to the Ghana Police Service for further action.

Two Minilabs<sup>®</sup> were ordered for the two new MQM sites—Wa and Tamale—and shipped to the FDA. Training for the provincial staff took place at FDA in August 2013, and FDA completed all testing in September 2013.

#### **Strengthen the capacity of the FDB NQCL and assist toward ISO 17025 accreditation**

In September 2014, all work was completed at the new site, and FDA moved. PQM has planned a trip in the fall of 2014 to conduct training and qualification of equipment. The move to the new site will initiate a lot of activities, including training and other preparations to achieve ISO 17025 accreditation.

While waiting for the move to occur, PQM assisted FDA by providing key reference standards and equipment necessary to qualify its dissolution system (which will be one of the scopes of accreditation). Additionally, PQM provided a list of key equipment and vendors and facilitated the shipment of USP reference standards (\$25,000) to FDA under the USP TAP agreement.

#### **Collaborate with FDB and other stakeholders in the local pharmaceutical industry to build capacity for GMP improvement**

A GMP workshop was held in May for manufacturers interested in receiving PQM technical assistance.

#### **Support inclusion of FDA data in the PQM Medicine Quality Database (MQDB) and analyze trends to provide a basis for informed decision-making**

FDA has provided PQM with MQM data from all sentinel sites to be included in the MQDB.

#### **Sensitize the public to the dangers of substandard and counterfeit medicines**

MQM testing was completed by FDA in September 2013. PQM will evaluate the results, which will be compiled in a report and disseminated to partners in November 2013.

### Challenges

The delay in the move to the new FDA facility continues to be the main challenge in progressing with the ISO 17025 accreditation process.

## **KENYA**

### Background

PQM started working in Kenya in 2009 with the support of PMI through USAID/Kenya. PQM created a sustainable protocol for MQM in Kenya, and five sentinel sites for monitoring antimalarial medicines were established. PQM initiated the first round of MQM activities in 2010 by training representatives of the Pharmacy and Poison Board (PPB), the NQCL, and others in sampling strategies, Minilab<sup>®</sup> basic tests, and reporting and managing medicines quality data. Second and third rounds were carried out in 2011 and 2012. Based on MQM findings, PPB has been instrumental in taking regulatory actions by jailing the sellers of counterfeit antimalarials, closing a manufacturer for selling poor quality and unregistered samples, recalling non-conforming samples, and destroying expired antimalarials.

The NQCL obtained WHO PQ status in 2008. In 2011, the NQCL started the process of ISO 17025 accreditation with PQM assistance. In addition to assisting the lab toward ISO 17025 accreditation, and as part of reinforcing the capacity of the NQCL, PQM has been providing technical assistance to lab staff through the Network of Medicines Control Laboratories (NOMCOL). The primary objective of this network is to provide a forum for sharing best practices at the national level on medicines quality; it provides the participating laboratories the opportunity for South-South collaboration on quality control of medicines. Kenya is a charter member of NOMCOL.

### Key Activities

#### **Continue to strengthen MQM beyond sentinel sites**

The report on the second and third rounds of MQM activities has been reviewed and submitted to stakeholders. For round four, PQM conducted a refresher training on sampling strategies and reporting and Minilab<sup>®</sup> testing for staff from PPB and NQCL (24 participants). For this round, sampling and testing were expanded to two refugee camps in addition to the five existing sentinel sites.

During the course of this activity, PQM staff and Division of Malaria Control (DOMC) representatives conducted monitoring and evaluation of Minilab<sup>®</sup> activities at Kakamega and Eldoret sentinel sites. The findings report has been shared with relevant partners, and recommendations were provided to address the challenges encountered in the field.

#### **Continue to promote regulatory actions by sharing MQM data**

In collaboration with DOMC and MSH/HCSM, PQM organized a dissemination meeting at the MSH facility in September 2013. The purpose of the meeting was to present MQM data for rounds 2 and 3 and to share with the stakeholders the preliminary results of round 4. The main findings of this round include failed antimalarial ACTs (Artemether /Lumefantrine from 3 different manufacturers). Confirmatory testing of these products is ongoing at NQCL.

This year was marked by PPB jailing the seller of the failed quinine samples (tablet and injection) and fining the pharmacist. Both antimalarial medicines are part of DOMC's malaria treatment plan and are intended to be used in severe malaria cases.

#### **Strengthen NQCL's capacity and assist the lab toward ISO 17025 accreditation**

To improve the lab's capacity, PQM provided the necessary resources to conduct inter-laboratory proficiency (ILP) testing and offered guidance on testing and reporting results. The results of the testing will be discussed at a larger meeting organized by USP in Ghana in December 2013. The NQCL's new director and the lab analyst who conducted the ILP tests will participate in this meeting among other members of the NOMOCL network.

To advance the lab toward ISO 17025 accreditation, PQM conducted a QMS assessment of the lab and evaluated the status of its equipment. A detailed report on the findings and how to address them



has been provided to the lab Quality Assurance Managers. PQM assisted the lab in submitting the application to SANAS as their accrediting body.

### Challenges

The major challenge this year was the high turnover of managers and directors at NQCL. In less than one year, two acting directors were appointed, and four lab managers left NQCL. This management issue has impacted the implementation of the planned activities, especially the release of QC testing by the lab to PPB and DOMC, and delayed the review of the documentation needed for advancing the process of ISO 17025 accreditation.

## **LIBERIA**

### Background

PQM helped Liberia to establish the Liberian Medicines and Health Products Regulatory Authority (LMHRA), which was the result of a bill signed into law in 2010. Using funds from the President's Malaria Initiative (PMI) and the President's Emergency Plan for AIDS Relief (PEPFAR), PQM provided technical assistance and training to build the capacity of the LMHRA to perform regulatory functions.

In partnership with the LMHRA and the National Malaria Control Program (NMCP), PQM conducted three rounds of medicine quality monitoring (MQM) of antimalarials in Monrovia and its suburbs. The results showed that over 50% of the medicines collected and tested were substandard or counterfeit; the vast majority was found to be monotherapy treatments. In collaboration with the National AIDS Control Program (NACP), PQM expanded the third round of MQM to include collection and testing of antiretrovirals and medicines to treat opportunistic infections (OIs). PQM shared the report with the LMHRA, NMCP, and NACP, which prompted the LMHRA to recall failed lots and the NMCP to push for banning monotherapy. The recalled antimalarial medicines included three different batches of quinine sulfate suspension for children, two batches of artesunate, and one artemether injection. The results of confirmatory testing of artemisinin-based combination therapies (ACTs)—performed at USP labs due to the limited technical capacity of the LMHRA staff to test fixed-dose combination dosage forms—revealed that one in five medicines failed dosage content testing. Confirmatory testing was not completed on all collected samples due to non-functionality of some major lab equipment at the LMHRA lab.

The MQM program and training for lab staff have been essential in providing evidence-based data to LMHRA to take regulatory actions on non-conforming medicines. The success of the program is made possible with the continuous commitment of the previous acting director, Mrs. Clavenda Parker, and the current director, Mr. David Sumo. Thanks to their dedication, several regulatory actions have been taken against the unlawful sellers, and all failed samples were recalled and incinerated.

With USAID financial support, PQM continues to support LMHRA in its efforts to establish priority medicines regulations, manage its regulatory functions, strengthen the QC lab, and set up a robust post-marketing surveillance program.

### Key Activities

#### **Continue building the capacity of the quality control laboratory strengthening medicines quality control capabilities**

To strengthen the technical capacity of LMHRA's national quality control lab, PQM provided lab resources including columns, Minilab<sup>®</sup> RS, and USP RS, reagent and chemicals to complete the testing of round 3 samples and to start round four. Due to technical challenges at the lab, PQM tested selected samples of ACTs and ARV medicines at USP labs.

PQM trained 5 staff in on compendial testing using HPLC, LOD, and pH. Additional training was also provided on using USP General Chapters and General Notices. Although this part of the training was not in the scope of work, it was discovered that the training was necessary in order for the participants

to fully understand and apply the analytical technique according to USP monograph.

To address the issues of power outages and water shortages at the lab, PQM suggested ways to improve the situation by having combined city power and solar energy and installing a larger water tank for the lab. Due to budget limitations, only a larger tank has been procured by LMHRA. The issue of limited power still persists.

To overcome one of the challenges of conducting compendial testing on failed samples, PQM assessed the status of the lab equipment and repaired the non-operational ones. To this end, PQM assisted the lab in repairing the HPLC, UV spectrophotometer, and dissolution tester. PQM also installed a new water purification system and repaired the existing one. To continue maintaining lab equipment, PQM established a one-year lab maintenance contract with an approved vendor.

### **Continue assisting LMHRA in strengthening its regulatory capacity**

This year was marked by LMHRA taking more than 20 regulatory actions on failed medicines found during round 3 and confiscating hundreds of unregistered pharmaceutical products.

LMHRA's and NQCL's excellent progress prompted an unprecedented visit in September by high-level U.S. delegates—including former U.S. Secretary of State Condoleezza Rice. The U.S. delegates were pleased to see how the investment of USAID funds is helping Liberia clear its market of counterfeit medicines and ensure that good quality medicines are being made available to patients.

### **Support NDS, LMHRA, and major health programs in monitoring the quality of essential medicines and promote regulatory actions**

In collaboration with the Inspectorate and Registration departments of LMHRA, the NMCP, and the MOH of Liberia, PQM staff organized a third round of sampling and testing of antimalarial, antiretroviral, and opportunistic infections medicines. A total of 80 samples of ARVs and medicines to treat OIs were collected; one round of testing using Minilabs<sup>®</sup> was completed. Due to non-functionality of major lab equipment, the lab staff was unable to complete the compendial testing of failed samples. To overcome this hurdle, PQM assisted the lab by testing selected medicines (7 antimalarial tablets, of which 1 artesunate+amodiaquine and 1 artesunate failed, and 3 antiretroviral tablets, all of which passed).

The previous rounds of MQM activities have been conducted in Monrovia and its suburbs. To decentralize this activity and make it more structured and sustainable, PQM in collaboration with NMCP and LMHRA, developed an MQM protocol that was shared with relevant partners. The fourth MQM round was expanded to Margibi and Bomi counties. In August, PQM and the partners collected samples from Monrovia and the Margibi sites (Kakata and Harbal). Sampling and testing of the collected samples is ongoing at the LMHRA QC lab. The second phase of sampling and testing from Bomi site will be conducted in November 2013.

The MQM program has been instrumental for LMHRA in taking regulatory actions. PQM worked jointly with the lab to provide evidence-based data to LMHRA. These data were used by the newly-hired LMHRA Managing Director in taking over 20 regulatory actions and in enforcing the regulation of the pharmaceutical market in Liberia. PQM shared examples of the actions taken by LMHRA and a copy of their DVD on the confiscation and incineration of recalled medicines with USAID/Liberia during their August visit to the lab.

### **Challenges**

LMHRA has made some progress in improving the water supply to the lab by adding a larger tank on the roof of the lab and by addressing some key issues related to energy supply. However, additional challenges—such as an insufficient number of qualified staff to run compendial testing, insufficient lab equipment and supplies to carry out basic QC activities, an inadequate QMS, and limited funds—remain to be addressed.

## **MOZAMBIQUE**

### Background

PQM has been working in Mozambique since 2010. Activities have focused on strengthening the quality control (QC) and quality assurance (QA) capabilities of Mozambique's medicines regulatory authority, the Departamento Farmacêutico (DF).

### Key Activities

#### **Strengthen the capacity of the National Laboratory for Medicines Quality Control (LNCQM)**

PQM provided training for LNCQM staff on Karl Fischer titration and advanced HPLC; in addition, refresher training for Karl Fischer was also provided. Reagents, lab supplies, reference standards, and major equipment were procured and shipped to the lab. The major equipment includes dissolution, disintegration, water distiller, and UV/Vis. Perkin Elmer qualified the UV and provided the lab staff with basic training as well. To assist LNCQM with their goal of obtaining ISO accreditation, PQM helped draft a strategic plan which will be translated into Portuguese.

#### **Sensitize the public to the dangers of counterfeit and substandard medicines by publicizing LNCQM and DF activities**

MQM round 1 was completed and results sent to the Pharmaceutical Department; however, PQM was advised that due to political sensitivities, we are precluded from publicizing messages at this time.

#### **Support the MQM program**

PQM, in coordination with LNCQM, identified two additional sentinel sites for the MQM program – Cabo Delgado and Tete. Two Minilabs<sup>®</sup> were purchased and shipped to LNCQM for the new sites. Provincial staff were trained on the proper use of Minilabs<sup>®</sup> in April, and one round of sample collection and testing was completed at all sentinel sites. In August, the results were sent to PQM for evaluation.

### Challenges

In Q1, the funds allocated had not arrived thus restricting certain activities. However, forward funding was approved in January 2013. Another challenge was that many of the trained staff have left their jobs, so PQM will have to identify new provincial focal personnel to train that will assist LNCQM.

## **NIGERIA**

### Background

In 2012, USAID/PMI-Nigeria selected PQM to provide technical support to the National Malaria Control Program (NMCP) and the National Agency for Food and Drug Administration and Control (NAFDAC). The mission also selected PQM to support strengthening the capacity of select Nigerian manufacturers that produce zinc sulfate tablets, Chlorhexidine gel, and other maternal and child health priority commodities of the UN Commission on Life-Saving Commodities for Women and Children.

### Key Activities

#### **Assess the quality assurance/quality control of antimalarial medicines**

PQM conducted a rapid assessment of the QA/QC capabilities of Nigeria's NMCP and NAFDAC in April 2013 and held discussions with stakeholders on ways to strengthen the quality assurance of medicines in general and antimalarials in particular.

#### **Monitor the quality of antimalarial medicines**

PQM and its local partners established an MQM program for antimalarials at six sentinel sites. PQM trained 24 staff from NAFDAC, the Federal Medical Store (FMS), and the National Product Supply Management Program (NPSCMP) on sampling and screening antimalarials using Minilabs<sup>®</sup>. The stakeholders, including NMCP, NAFDAC, FMS, NPSCMP, and PQM developed a protocol for the MQM

program. PQM provided resources for conducting the first round of sampling and testing of antimalarials. The completion of this round is expected by the end of calendar year 2013.

### **Strengthen the regulatory capacity of NAFDAC**

Two staff from NAFDAC received training in Dossier Evaluation at the Center of Pharmaceutical Advancement and Training in Ghana. This training is helping NAFDAC strengthen its drug registration process. Two NAFDAC inspectors received GMP training that will help NAFDAC conduct audits of pharmaceutical manufacturers. For each of the trainings, NAFDAC sponsored the participation of two additional staff.

### **Assist NAFDAC's central QC lab in attaining ISO 17025 accreditation**

NAFDAC's goal is to achieve ISO 17025:2005 accreditation and WHO PQ. PQM evaluated NAFDAC's quality management system at the Yaba Central Drug Quality Control Lab. PQM provided details of the nonconformities identified, including suggested corrective actions and timelines. PQM will work with NAFDAC on implementing effective corrective actions and will continue to provide technical assistance to strengthen their QMS.

### **Support the NMCP in developing a quality assurance policy for antimalarials and diagnostics**

Stakeholders requested the development of a comprehensive QAP that will cover not only antimalarials but also anti-tuberculosis and antiretroviral medicines. Information has been gathered to develop the QAP, and stakeholders from the malaria, TB, and HIV-AIDS health programs drafted parts of the QAP. PQM reviewed the draft sections of the policy and provided comments and recommendations.

### **Build capacity in GMP of selected local manufacturers of zinc sulfate, chlorhexidine, and other MCH commodities for global and local supply**

PQM, in conjunction with NAFDAC, issued solicitations to Nigerian manufacturers requesting that they submit expressions of interest (EOIs) regarding the manufacture of zinc sulfate dispersible tablets and oral rehydration salts (ORS). Responses identified CHI Pharmaceuticals, Ltd. as the only company currently manufacturing the products of interest, with six other companies (Emzor, Swiss Pharma, Phamatex, May & Baker, Fidson, and Juhel) expressing interest in manufacturing the products. PQM performed a pre-procurement GMP assessment of Chi Pharmaceuticals, and based on the documents reviewed, personnel met, and the manufacturing premises audited, Chi in its current status complied with the GMP requirements to manufacture zinc sulfate tablets. PQM also visited the six other manufacturers and began providing technical assistance to build their GMP capacity. PQM also tested several batches of zinc sulfate tablets provided by Chi as well as obtained from the market.

Nigerian manufacturers were also requested to submit EOIs for the manufacture of chlorhexidine gel. A total of 10 companies responded, and 6 were selected to visit. PQM visited 6 manufacturers in Nigeria and evaluated manufacturing capabilities via walkthroughs. Based on the rapid assessment, 3 companies were further identified as having the infrastructure and key elements needed to produce chlorhexidine gel and will be the focus of PQM technical assistance and technology transfer from Lomus in Nepal.

### Challenges

Initially, developing a QAP for antimalarials and RDTs was set as the first step that would lead to developing a national QAP for pharmaceuticals. The inclusion of TB and HIV-AIDS health programs was a positive development; however, drafting the QAP will take more time to complete.

## **SENEGAL**

### Background

Since 2002, USAID and USP have been providing technical assistance to Senegal to strengthen their medicine QA/QC systems. An MQM program was launched in 2002 at five sentinel sites to monitor

antimalarials. In 2009, the program expanded to four additional sentinel sites and began covering antiretrovirals, antituberculars, and contraceptive products.

Senegal's official medicines control laboratory (LNCM) has been working to obtain ISO 17025 accreditation. An important component of PQM technical assistance has been to strengthen the lab's compliance of with international quality management system (QMS) standards.

#### Key Activities

##### **Continue to support MQM at nine sentinel sites and encourage Direction de la Pharmacie et des Medicaments (DPM) to take enforcement actions based on data collected**

PQM shared the results of the 2012 round with the technical committee; during this round, five substandard ACTs (Artemether- Lumefantrine) were recalled. The next step is to share the MQM results with regional chief doctors of each sentinel sites. This meeting has been postponed until the end of 2013.

Sampling and testing for the 2013 round have been completed in nine sites, and confirmatory testing is ongoing at the LNCM. With the contributions of the TB and HIV programs, this round included the testing of HIV and TB medicines.

##### **Strengthen the capacity of DPM to support enforcement of its regulatory actions**

PQM made several attempts to conduct a workshop with DPM and customs. However, due to the absences of the DPM director then to his retirement, the workshop has been postponed until next fiscal year.

##### **Continue strengthening the capacity of LNCM and guide the lab toward ISO 17025 accreditation**

To comply with ISO 17025 requirements, PQM conducted a QMS audit and lab equipment assessment. The findings of this visit were provided in a detailed report to the lab. PQM also organized a meeting at the Ministry of Health to share with partners the importance of having the Senegal QC lab accredited. PQM presented the LNCM budget needs, in terms of equipment and training, along with justifications of each requested item.

As a part of the accreditation processes, PQM procured a new Karl Fisher and trained the lab staff on its use. PQM also provided SOP templates and reviewed more than 20 lab documents pertaining to ISO 17025 requirements.

#### Challenges

Delays in completing the confirmatory testing at the lab and starting this year's MQM round are due to the lack of qualified personal dedicated solely to lab activities.

## **Asia**

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### **REGIONAL DEVELOPMENT MISSION FOR ASIA (RDMA), MEKONG MALARIA**

#### Background

Malaria remains a disease of public health importance in the Greater Mekong Sub-region (GMS), the impact of which is compounded by increasing concerns about the emergence of artemisinin-resistant malaria in the GMS, which might have arisen from, among other factors, availability and use of poor-quality antimalarials. Although there have been some improvements, there continues to be sporadic incidences of such products in the region requiring intensified and coordinated efforts of intervention.

In FY13, with the financial support from USAID and PMI, the PQM program designed its approach based on the limited availability of resources (both financial and technical) to provide assistance to GMS countries in the following priority areas:

1. **Build capacity of medicines regulatory authorities (MRAs)**
  - Work with MRAs to establish and strengthen post-marketing surveillance.
  - Provide technical assistance in medicine registration & dossier evaluation.
  - Help manufacturers to improve their compliance with GMP standards.
  - Train inspectorate in GMP and pharmaceutical supply chains inspection.
  - Maintain the operations of the regional centers of excellence network in medicines quality assurance.
2. **Strengthen quality control (QC) labs to meet international standards of practices**
  - Train lab staff in GLP, analytical techniques and procedures.
  - Provide lab equipment and train in its proper use and maintenance.
  - Provide reference materials, reagents, and other needed chemicals.
  - Provide technical assistance toward ISO 17025 accreditation and WHO Prequalification of laboratories.
3. **Conduct operational research on medicines quality**
  - Conduct studies on medicines quality in public & private health facilities.
  - Investigate quality of high-priority essential medicines in border areas.
4. **Monitor medicines quality and use data to facilitate and support enforcement**
  - Maintain key surveillance sites to screen for quality of antimalarials and selected antibiotics for evidence-based data and provide them to MRAs and other relevant agencies for appropriate actions.
5. **Raise awareness about how medicines quality affects public health**
  - Produce public service announcements and videos on the dangers of SCMs.
  - Publish articles, reports, and promotional materials on medicines quality issues and importance of buying from approved outlets.

#### Key activities

Regional Activities covering Cambodia, Laos, Thailand, and Vietnam related to Malaria

- **Support medicines quality surveillance by maintaining the sub-regional MQM to obtain evidence-based data to support policy decision-making and enforcement action**  
PQM has been in discussions with GMS partners to collect information on programmatic and sampling methodologies to improve MQM activities in the region. As part of this effort, a workshop on conducting a regional comparative study on the quality, presence, and source of antimalarials (AMLs) and selected antibiotics was held in Ho Chi Minh City, Vietnam in October 2012 with study investigators from Cambodia, Laos, Thailand, and Vietnam. Random sampling methodology is used in this study to compare results between MQM sites and non-MQM sites in selected areas in each country. Additionally, PQM worked with the Drug Administration of Vietnam (DAV), National Institute of Malarology, Parasitology, and Entomology (NIMPE), and local authorities to conduct site visits to four communes in the reported artemisinin-resistant Binh Phuoc province of Vietnam in Jan-Feb 2013 where 25 samples of AMLs were collected using the improved sampling protocol and techniques (mystery shoppers in the private sector) and analyzed at the Institute of Drug Quality Control in Ho Chi Minh City. Among these samples were chloroquine, quinine, primaquine, and artesunate tablet monotherapies. All 25 samples passed quality testing for identity and content. In July 2013, PQM and the Department of Drug and Food of Cambodia went to Rattanakiri and Mondulakiri provinces to collect samples for quality checking. Nine AML samples were collected and are being tested at the National Health Products Quality Control Center (NHQC) and Chulalongkorn University Pharmaceutical Technology Services Center. A similar strategy and techniques were used in Rakhine State of Burma to collect AML samples for quality testing, and results will be available in FY14 Q1.
- **Build the capacity of NQCLs in pharmaceutical analysis toward compliance with ISO 17025 and/or WHO prequalification for both pre- and post-marketing surveillance of medicines quality, with support provided by the Asian Network of Excellence in Quality**

## **Assurance of Medicines (ANEQAM) and Building Regional Expertise in Medicines Regulation, Information-sharing, Joint Investigation, and Enforcement (BREMERE)**

PQM provided some 100 reference standards for compendia analyses and reference products for Minilabs<sup>®</sup> to Laos's Food and Drug Quality Control Center (FDQCC), Cambodia's National Health Product Quality Control Laboratory (NHQC), Vietnam's National Institute of Drug Quality Control (NIDQC), and Thailand's Bureau of Drug and Narcotics (BDN).

PQM continues to review the Quality Manuals and SOP documents of Laos FDQCC and NHQC. With technical assistance from PQM, the BDN lab in Thailand achieved WHO Prequalification in November 2012, enabling it to be eligible to participate in the testing of all GFATM granted products worldwide. A joint USP-BDN press release was issued to celebrate this success. Additionally PQM was successful in providing technical support to the NIDQC to achieve WHO PQ re-qualification status in May 2013 for another 3 years.

The Burma FDA Nay Pyi Taw Lab, Cambodia NHQC, Laos FDQCC, Thailand BDN, and Vietnam NIDQC and HIDQC have signed agreements with USP's Technical Assistance Program (TAP), which allows these laboratories to purchase USP reference standards, related products, and publications at discounted prices (up to 75% off) according to their economic development status based on the World Bank classification. These laboratories also joined a newly established USP Initiative "Network of Official Medicines Control Laboratories for Asia Pacific" aiming to enhance exchange of expertise and skills in quality control of medicines measures and technologies.

- **Support regional and in-country coordination for effective enforcement through BREMERE and, possibly, WHO Substandard/spurious/falsely-labeled/falsified/counterfeit medical products (SSFFC) mechanism**  
Since the inauguration of the BREMERE initiative in August 2012, communication on how to address poor quality medicines in the GMS between PQM, MRAs, and law enforcement agencies in the region has increased. Feedback on BREMERE terms of reference were received from each country as well as from regional and international partners, including ASEAN Secretariat, WHO/WPRO and SEARO, INTERPOL, and the French Ministry of Foreign Affairs' Priority Solidarity Funds Mekong Project. The BREMERE action plan development and implementation meeting was held in February in Cambodia. Five countries in the GMS (Burma, Cambodia, Laos, Thailand and Vietnam) have confirmed their BREMERE focal points. Indonesia, Malaysia, Philippines, and South Korea are still considering joining the initiative.
- **Support the pharmacy schools to improve last-year pharmacy student curriculum on medicines policy, quality assurance and regulations to prepare them for real-world experiences with different types of pharmaceutical practices**  
After face-to-face discussions with the deans of two leading universities' Faculties of Pharmacy in Cambodia (one private and one public), a team of two will be recruited to review the existing curricula of the two schools on topics related to quality assurance of medicines using the questionnaire and tools developed by PQM. The recruitment of the reviewing team has been delayed by the resignation of the in-country PQM consultant. A follow up face-to-face meeting was conducted with the Dean and team of University of Health Sciences Faculty of Pharmacy in Cambodia and action items were discussed; the activity will take place in FY14 Q2.
- **Maintain the momentum of awareness-raising about the danger of using counterfeit and substandard medicines in the GMS through existing and proven means and tools**  
The regional documentary "Pharmacide: The Mekong" was screened at the Pharmacide Arts and Documentary Film on Counterfeit Medicines Exhibition in Bangkok, Thailand by the French Ministry of Foreign Affairs Priority Solidarity Funds Mekong Project and involved partners (PQM,

Soho Films International, WIPO, Cecil and Hilda Trust, and MetaHouse Cambodia). The event was attended by some 20,000 viewers according to the organizer.

A survey on the awareness of counterfeit medicines among private pharmacy operators and retailers in Vientiane, Laos was conducted by the MOH Food and Drug Department in collaboration with the U.S. Embassy Public Relations Unit. The MOH/FDD of Laos has submitted the findings of a pre-intervention survey of the retail pharmacies to the US Embassy in Vientiane and to PQM for comment. Post-intervention interviews are ongoing, and a report will be available in FY14 Q1.

Several hundred leaflets and posters on awareness of malaria and poor-quality medicines being printed for dissemination, with the help of CAP-Malaria and other partners in Cambodia, to all elementary schools in malaria hot-spot areas in FY14 Q2-3.

### Challenges

1. Starting BREMERE took longer than anticipated due to hierarchical bureaucracy and reservations on the part of the government agencies in the region.
2. Political sensitivities in Burma and Cambodia resulted in the delay of operations.
3. Bureaucratic and formality clearance delayed establishing program operations in Burma.
4. Establishing a local PQM presence in Burma and Thailand has been difficult due to legal compliance requirements and costs on both sides. In addition, recruitment of consultants for regional and country work was time consuming. This challenge was aggravated by consultant turnover (the regional consultant stepped down because he could not obtain a work permit visa and neither USP nor local partners could provide this service).
5. Establishing the necessary relationships to move initiatives forward efficiently takes time for the new regional and two Burma country consultants.
6. There is limited funding for covering all key components of the PQM program in the region.
7. The long lead time for purchasing, receipt, installation, and qualification of lab equipment and for training the Burma FDA QC lab is a hindrance to program implementation.

### Burma/Myanmar

- **Establish a formal presence in Burma through a memorandum of collaboration (MOC) with the Ministry of Health (MOH) or Food and Drug Administration (FDA) and hire a county consultant to help operationalize PQM activities**

After extensive efforts, a Letter of Project Agreement between the MOH of Burma and USP has been signed by USP and re-submitted in September 2013 to the MOH for signature. PQM has been following up with the Department of FDA and Ministry of Health International Division to obtain the signature, which may take another month or two due to, among other obstacles, the recent organizational restructure of the FDA to become the Department of FDA headed by a newly appointed Director General.

To enhance the collaboration between the Control and Prevention of Malaria (CAP-Malaria) and PQM, an MOU has been signed by both parties. As an immediate result of this MOU, CAP-Malaria provided office space for PQM which was opened in Yangon in August 2013.

In May, PQM hired a part-time senior level consultant, Dr. Soe Myat Tun, a former Burma FDA Director; and in August, Dr. Lu Lu Kyaw Tin Oo, a full-time technical consultant, joined PQM to help coordinate PQM program implementation.

- **Support the FDA Nay Pyi Taw QC lab to perform compendial monograph testing of key antimalarials and FDC products**

Following training conducted in May 2012 on establishing an MQM program at 5 sites, sample collection for quality testing has begun. PQM identified the specifications of critical lab



equipment (HPLC and dissolution tester) for the FDA Nay Pyi Taw QC lab. The HPLC is being procured through USAID implementing partner, JSI-DELIVER, while the dissolution tester is being procured by PQM using reprogrammed funds originally planned for China activities.

PQM has also completed setting the technical and quality specifications for other essential lab equipment/instruments along with their justifications and training needs and submitted the list to the USAID Missions in Burma and RDMA for approval. A training workshop on advanced compendia analysis of artemisinin combination products has been postponed to FY14 Q1 due to the delayed acquisition of the new HPLC and dissolution tester mentioned above.

- **Conduct program implementation review and develop a strategic document for improving the quality of essential medicines for Burma**

This activity is postponed to FY14 Q1-2.

## **CAMBODIA**

### Background

PQM provides technical assistance to the Royal Government of Cambodia in efforts to strengthen the country's medicines quality assurance program and quality control systems (QA/QC) covering the following three objectives: Improving detection of poor-quality medicines and supporting the MOH to take action against counterfeit and substandard medicines (CSMs) and health products based on the analysis results; strengthening medicines QA/QC through building the capacity of the Department of Drugs and Food (DDF) and National Health Products Quality Control Center (NHQC); and raising awareness about medicines quality issues and improving access to medicines quality information among regulators, health care professionals, and the general public. To improve detection methods and QA systems, PQM helped establish an MQM program to support post-marketing surveillance of the quality of antimalarial and other infectious disease medicines in the marketplace.

### Key Activities

#### **Improve detection of poor quality medicines, sustaining activities in 12 established sentinel sites while transitioning program ownership to the Cambodian government**

Most MQM activities in Cambodia are conducted with funds leveraged with the Global Fund. Due to the end of Global Fund Round 6 (GFR6) in September 2012, activities related to the sampling and testing at the 12 established sentinel sites are on hold because the PQM budget alone cannot cover the full costs. Since October 2012, no samples have been collected from the 12 MQM sites. However, the results of confirmatory tests of 72 samples of the 240 samples collected from the 12 sentinel sites during July-September 2012 were released by NHQC. One sample failed the quality testing: Erythromycine 500mg, Batch No. 3766, from the Laboratoires PPM, Cambodia. The API content was 79.6 % and the DDF has reported the finding to the Committees for Elimination of Counterfeit Drugs and Illegal Health Services (ICM) for appropriate action.

In FY13, PQM, in collaboration with the DDF, conducted a special investigation at sites not covered under MQM to monitor the quality of medicines. 160 samples were collected from the 9 provinces that are solely PQM-funded. Those samples were sent to NHQC for quality testing; 13 samples (among Fluconazole, Ibuprofen, Cetirizine, Levocetirizine, and Levofloxacin) failed quality testing. The IMC secretariat held several meetings to evaluate the testing results and investigated possible causes of failure. The secretariat:

- Removed the registration numbers of 2 products (Levofloxacin 500mg manufactured by Flamingo-India and Cetirizine manufactured by Troikaa Pharmaceuticals Ltd.-India).
- Bought 4 more samples (2 samples were duplicated) and re-tested the quality for further investigation.
- Officially gave warning to the 6 pharmaceutical companies (Mega, Ratanak Ratana, VimpeX, Zifam, Medical Supply, and Vignesh).

In July 2013, following MQM testing results, the Cambodian MoH banned all product registrations from Flamingo Pharmaceutical Limited-India due to repeated testing failures.

In July 2013, PQM and MoH drugs inspectors conducted field visits to 2 sentinel sites (Rattanakiri and Mondulkiri) bordering Vietnam to check on MQM activities and the quality of work, and also to see if there is Artemisinin-resistance in the area, which was recently reported. Among 9 samples of antimalarials collected in these 2 provinces, 5 were sent to NHQC and 4 to Chulalongkorn University Pharmaceutical Technology Services Center for quality testing. Results are expected by October 2013.

There has been a long delay in implementing the comparative study on the quality, presence, and source of AMLs at sites both with and without an MQM program in Cambodia, due to pharmaceutical procurement sensitivity after the general election. A country study team has been formed and was ready to conduct the study in Cambodia, but the activity was delayed because the Cambodia MoH had not given approval to collect samples from public health facilities. After a meeting between PQM and the MOH/Secretary of State for Health (SSH) and the DDF Directorates in July 2013, PQM received verbal approval from the SSH to include public sector sampling. It is expected that the study can be started in October 2013.

### **Strengthen medicines quality assurance and quality control systems by building up the capacity of DDF and NHQC**

PQM supported the workshop “Annual Assessment of Inter-Ministerial Committee (IMC) and Provincial Committees for Elimination of Counterfeit Drugs and Illegal Health Services for Poverty Reduction 2012.” The workshop was held in December 2012 in Phnom Penh with 114 participants.

Cambodia’s Pharmacovigilance Center, which received technical support from PQM, became an associate member of the WHO Collaborating Center for the International Drug Monitoring in 2009. In 2013, the Center became the 111<sup>st</sup> full member.

The MOH/DDF has finalized the Good Pharmacy Practices (GPP) Guidelines, and PQM provided editorial review for its English version. 1500 copies were printed; training materials are being developed and will be sent to PQM for review. Furthermore, the MOU between MoH/DDF and PQM for FY14 was signed. With this MOU renewal, we expect that MoH/DDF could conduct GPP training in collaboration with PQM in FY14 Q1.

After the successful BREMERE inauguration in August 2012, the BREMERE implementation meeting took place in February 2013 in Cambodia. There were 32 participants from Cambodia, Lao PDR, South Korea, Thailand, and Vietnam, as well as other partners. The BREMERE Chair (Dr. Heng Bunkiet, Director of Drug and Food, MOH Cambodia) and Co-chair (Dr. Somthavy Changvisommid, Director General Food and Drug Department MOH Laos) were selected. A strategic plan for 2013-2015 and action items were agreed upon during the meeting. Five countries in the GMS (Burma, Cambodia, Laos, Thailand, and Vietnam) have confirmed their focal points for BREMERE activities.

The final lab design on NHQC’s new building construction project was approved, with certain reservations, by the engineer/architecture expert from arc2lab. There are some critical points that need to be further discussed. PQM and arc2lab have finished the review of necessary equipment and furniture and created a list to submit to the World Bank and MoH.

In order to work with the NHQC management team to implement the ISO 17025 accreditation roadmap, in February 2013 PQM’s Quality Management Services Manager met the NHQC management team to perform a quick assessment of the lab’s quality management system (QMS) status.

## **Raise awareness about medicines quality issues and disseminate information among the regulators, health care professionals, and the public**

In collaboration with DDF, a leaflet on basic knowledge of counterfeit medicines was designed and 50,000 leaflets were printed. These leaflets were distributed to medicine outlets in all 24 provinces and to community villagers through USAID implementing partners. In addition, a drama poster was created and presented in elementary schools to educate children about counterfeit antimalarials. To help the children more easily share these materials with their families, the poster was converted to a booklet. This booklet will be printed in October 2013.

### Challenges

1. The ending of GFR6 funding has adversely affected MQM activities. Self-sustainability of MQM activities is a big challenge for the Cambodia MRA because the government's budget is limited.
2. A limited number of qualified technical staff at DDF presents a key challenge to implementing program operations in Cambodia
3. The general election caused delays and reduced involvement of MOH/DDF and NHQC in PQM-supported program activities in the field and their participation in training workshops abroad.

## **INDONESIA**

### Background

The National TB Control Program of Indonesia (NTP) faces many challenges in scaling up its efforts to control the spread of multi-drug resistant tuberculosis (MDR-TB) and extensively-drug resistant tuberculosis (XDR-TB). A multi-pronged approach has been developed by PQM in collaboration with the NTP and the National Agency for Food and Drug Control (NA-FDC) in support of TB control by increasing access to quality-assured anti-TB medicines from both local and imported sources. PQM provides technical assistance to Indonesian manufacturers to support the submission of high-priority anti-TB medicines (1<sup>st</sup> and 2<sup>nd</sup> line) product dossiers for WHO Prequalification. PQM also builds national and provincial capacity of the NA-FDC through the development and implementation of MQM to enhance post-marketing surveillance of anti-TB and antibiotic medicines. In addition, PQM plays an important role by facilitating coordination among the regulatory authority, the national and provincial labs of NA-FDC, the NTP, and local manufacturers to increase availability of and access to quality-assured, anti-TB and antibiotic medicines in Indonesia.

WHO Prequalification of medicines and the recognition of local Contract Research Organizations (CROs) in Indonesia will not only increase the supply of quality-assured medicines for Indonesia, but will also encourage Indonesian manufacturers to compete on the international market, with potential impacts on a global level via the GDF, other WHO (UN) procurement mechanisms, and private sector markets. PQM is uniquely poised in Indonesia to contribute to reducing shortages of both the Indonesian and global supply of anti-TB medicines meeting international standards for quality.

PQM sits on the Indonesian national Technical Working Group under the GFATM and provides input into the overall leadership, management, coordination, and proposal development for the National TB Control Program and the Country Coordinating Mechanism, and under select Health Systems Strengthening grants. PQM has also been collaborating with the ASEAN Secretariat in Jakarta to develop regional programs for training and building capacity for GMP inspection under PIC/S, and on BA/BE studies under the auspices of the ASEAN Pharmaceutical Products Working Group in light of ASEAN harmonization in 2015.

### Key Activities

#### **Maintain existing technical assistance to TB medicines manufacturers to obtain WHO prequalification for selected TB medicines**

PQM provided technical assistance to local public sector and private sector manufacturers of anti-TB medicines for both first- and second-line products. PQM worked with state-owned (public sector)

manufacturers Kimia Farma (2FDC & 4FDC), Indofarma (2FDC: rifampicin/isoniazid), and Phapros (4FDC: rifampicin/isoniazid/ethambuto/pyrazinamide) including assessments and on-site audits, providing CAPA recommendations and guidance on dissolution profiling, BE study protocols, product development and method validation, facility renovation in compliance with international GMP standards, comparator and reference standards, and coordinating with the NA-FDC on approvals. In addition, PQM engaged with a number of private sector manufacturers, entering into technical assistance agreements with Sandoz Indonesia, in support of three pediatric FDC formulations, and with Sanbe Farma on their levofloxacin 500mg FPP. It is anticipated that in FY14, up to three new manufacturers of second-line anti-TB products will be added to the pipeline.

Most of the manufacturers have identified early 2014 as the deadline for their product dossiers to be submitted to WHO PQ for the first tranche of products. PQM will continue to expand technical assistance to manufacturers for new products during the next five years.

PQM has also discussed the prequalification of anti-TB medicines with GFATM to eventually include them in the Voluntary Pooled Procurement program at GDF. WHO PQ will not only significantly contribute to increasing the supply of quality-assured medicines for the Indonesian market but will elevate Indonesian manufacturers to the global market, achieving recognition at an international level.

#### **Support implementation of MQM for ATB medicines at five pilot sentinel sites that completed training in June 2012**

Five Minilabs<sup>®</sup> were procured and sent to five provincial Balai Besar POM (BBPOM) labs in Indonesia. One round of sampling and testing was completed during FY13, with a second round in process at the start of FY14. A total of 869 anti-TB and antibiotic medicines were screened from five provincial MQM sites at the BBPOM labs (Medan: 160, Serang: 167, Surabaya: 148, Mataram: 262, Makassar: 132), with confirmatory tests in process at the 5 “sister sites” at the Padang, Bandung, Yogyakarta, Denpasar, and Semarang BBPOM labs. Results are still forthcoming; however, partial data are: one sample from Serang (confirmed at Bandung) failed assay, two samples from Makassar (confirmed at Yogyakarta) failed dissolution, and one sample from Surabaya (confirmed at Semarang) failed dissolution. Results from Mataram (confirmation in Denpasar) are still pending, and no samples failed from Medan (confirmed at Padang). For the failed samples, the results have already been communicated to Deputy 1 at BPOM to take appropriate action, and PQM will follow up with them directly. PQM also conducted three MQM supervisory visits with the NA-FDC and USAID to Makassar and Medan (2 visits), with more planned for Round 2 in FY14.

#### **Continue to assist two local CROs toward compliance with Good Clinical Practices (GCP) for BE studies of ATB medicines**

Equilab International (Jakarta) and San Clin EQ (Bandung) continued to make progress and implement CAPA recommendations from FY12 to comply with GLP and GCP. These two CROs have implemented a number of systems and facility upgrades in response to audits conducted by PQM, WHO, and other regulatory authorities in the region. PQM conducted comprehensive clinical and bioanalytical audits during FY13 to assess their readiness to conduct BE studies in conjunction with the WHO PQ project for local manufacturers. Both are now considered ready to conduct BE studies and will likely be audited by WHO when manufacturers submit their expressions of interest to apply for WHO PQ. If accepted by WHO, these CROs will be the only WHO-recognized CROs in Southeast Asia, a significant achievement representing major opportunities for Indonesia to lead the region in this area.

#### **Strengthen regulatory systems and measures of Ministry of Health and National Agency for Drug and Food Control to better control and regulate ATB medicines, particularly 2nd-line ATBs, in the market to support the MDR-TB program**

During FY13, discussions were held and a TOR drafted to hire a short-term consultant to implement this activity during November/December 2013. This activity will assess regulations and availability in the

private sector markets of anti-TB medicines and provide recommendations to key stakeholders (NTP, NA-FDC) to address issues.

**Open a PQM office in Jakarta; recruit technical staff**

PQM opened an office in Jakarta and hired a Chief of Party/Consultant to follow up the implementation of the PQM Indonesia program and coordinate with USAID and other partners.

**Assess the availability, quality, and main source of all first- and second-line ATB medicines in the main supply chains**

Implementation of this activity was delayed and will be started in FY14 with carryover funding.

**Assist NA-FDC and Directorate General of Plantation Production and Development (DG-PPD) to sample and test (lot-based) for quality ATBs in the main warehouses of Jakarta and main cities prior to distribution**

Implementation of this activity was delayed and will be started in FY14 with carryover funding.

**Expand MQM systems to cover antimalarial and antiretroviral medicines**

Implementation of this activity was delayed, and will be started in FY14 with carryover funding.

**Provide technical support to NQCL-DF toward renewing ISO 17025 accreditation with better, product-based scope**

The NQCL-DF of the NA-FDC received ongoing support from PQM in the scope expansion of their current ISO/IEC 17025 accreditation, including documentary and reference standards, training, and coordination with international agencies such as GFATM.

In FY13, the NQCL-DF was assessed by USP QC experts to develop an implementation plan towards WHO PQ, in addition to shifting the accreditation from product-based (current) to process-based to comply with WHO recommendations. The lab anticipates a two-year implementation period to apply for PQ, and PQM will be working with the lab to achieve agreed upon project milestones. PQM also conducted training on GLP and advanced compendial science at the NQCL-DF for national and provincial level officers, in cooperation with GFATM.

A major achievement for the PQM program during FY13 was GFATM's recognition of the NQCL-DF as an authorized ISO 17025-accredited lab to conduct quality control testing on GFATM-procured products for Indonesia and external clients for TB, HIV, and malaria. This is a major accomplishment and elevates the status of the national lab to an international audience. PQM will continue to support the lab by providing training, reference materials, and other technical assistance to ensure that the lab can absorb the demand for testing products for the Indonesian and other markets.

**Challenges**

1. The complexity of the bureaucratic system and logistics, including delays in receiving commodities, reference standards, and in sourcing comparator products for manufacturers and CROs is challenging.
2. Ministry of Finance regulations were not well understood by the partners or by PQM, resulting in some delays in implementing the MQM sampling and testing, which should be resolved with the next Letter of Agreement to begin in January 2014.
3. Local staffing challenges for more than half of the fiscal year resulted in delays in a number of the work plan activities, as senior GMP or QC staff from USP headquarters were only in-country as schedules permitted. In some cases, implementation of CAPA and responsiveness by some of the manufacturers and CROs was slow and complicated, resulting in timelines being revised and pushed back.
4. The inter-working relationship among agencies in the health and pharmaceutical sector has not been clearly defined, e.g., Departments of Pharmaceutical Services and Directorate General of

Pharmaceutical and Medical Device Administration in the MOH and the NA-DFC resulting in delayed and inadequate communication which impact PQM-supported program implementation.

## **PHILIPPINES**

### Background

Since 2007, PQM has been actively providing technical and professional assistance to Philippines Food and Drug Administration (FDA), Department of Health (DOH), National Tuberculosis Program (NTP), selected Local Government Units (LGUs) and Centers for Health Development (CHDs) in an effort to strengthen medicines quality assurance and quality control system (QA/QC) with emphasis on post-marketing surveillance through medicines quality monitoring (MQM) for anti-tuberculosis and other essential medicines available on the market in Philippines; to enhance the FDA regulatory capacity in evaluation & registration of pharmaceutical products through the introduction and buildup of internationally accepted quality standards, guidance, processes and procedures.

### Key Activities

#### **Sustain the MQM activities in established sentinel sites**

To ensure continued MQM on ATBs, PQM communicated with the 8 sentinel sites (Davao, Cebu, La Union, Bicol, Calabarzon, Iloilo, Zamboanga and Malolos) and conducted supervisory visits 1-2 times annually to each of the sites.

During the visits, Minilab<sup>®</sup> supplies and reagents were replenished and the collected expired ATB samples were brought to the FDA Central Laboratory for proper disposal. PQM staff also acted as “mystery shoppers” during the site visits in order to inspect local pharmacies to see if they follow the correct guidelines for dispensing medicines. ATB samples were collected and basic testing was conducted. Substandards or medicines with suspected quality defects are forwarded to FDA Central Laboratory for confirmatory testing.

The newest sentinel sites (Bicol and Calabarzon) received orientation and training to conduct TLC testing for first-line TB medicines. Refresher training was also conducted for appropriate staff.

In line with the expansion of MQM to second-line anti-tuberculosis medicines and antibiotics, PQM and Food and Drug Regulatory Officers (FDROs) trained all Minilab<sup>®</sup> staff at the pilot sentinel sites to do TLC testing for Amoxicillin, Cephalexin, and Ciprofloxacin.

#### **Strengthen FDA capacity and its QC lab to enhance the medicine regulatory system in drug registration and post-marketing surveillance**

PQM staff was invited as a keynote speaker and participated in the Philippines FDA “National Consciousness Week against Counterfeit Medicines” event held in November 2012. PQM staff spoke at the event and presented a photo exhibit for public viewing that received much interest.

PQM had a meeting in November at the FDA offices to follow up with second-line ATB manufacturers that have shown interest in WHO PQ and the technical assistance PQM can provide. Also in November, PQM met with representatives from academia, healthcare, the pharmaceutical industry, and the FDA to explore the possibility of strengthening a bioavailability/bioequivalence (BA/BE) center towards WHO acceptance.

PQM GMP expert travelled to the Philippines in September 2013, conducted a GMP assessment at Hizon Laboratories for the manufacturing of Levofloxacin tablets, reviewed their dossier, and provided recommendations. Lloyd Laboratories was also visited and PQM technical assistance was discussed.

#### **Enhance capacity of the FDA through training and visiting scientist program**

At the Davao satellite laboratory in October 2012, PQM gave a “Hands-on Training on the Compendial Analysis of Anti-tuberculosis Medicines and Introduction to Good Lab Practices” for 10 scientific staff

nominated from Davao, Cebu, and the Central Lab. PQM also conducted training on Pharmaceutical Process Validation in November 2012 for 26 participants in an effort to strengthen FDA's regulatory and registration capacity.

The PQM in-country consultant and three staff from the FDA attended the International Symposium on Drug Product Quality, Equivalency, and Regulations held in November 2012 in Manila.

In September 2013, a PQM–ASEAN–Philippines FDA “Joint Training Workshop on GMP and Pharmaceutical Quality Assurance of Anti-TB Medicines” was conducted in Manila. There were 35 trainees from the Philippines FDA and ASEAN member states who successfully completed the training.

Enhancing MRA capacity and technical competency in pharmaceuticals regulation and registration is one of the most important key elements in fostering ASEAN harmonization. In FY13, PQM developed training materials on Bioavailability/ Bioequivalence studies focusing on anti-TBs and antimalarials, and training is planned for October 2013 in a joint training workshop organized by PQM, the Philippines FDA, and ASEAN States.

The PQM in-country consultant attended the FDA Business Plan Orientation to further understand their needs and identify gaps to strengthen the capacity of FDA and its QC lab to include in collaboration activities for FY14.

PQM sent essential reference standards, supplies, and materials to the FDA in FY 13.

Moving forward, through USP's International Training Program, 2 scientists from the FDA Davao Satellite Lab and 2 scientists from the FDA Central Lab will go to USP HQ for training. Also, through the Visiting Scientist Program, 1 regulatory officer and 1 lab tech staff will go to USP HQ for training.

The FDA has signed an agreement with USP's Technical Alliances Program (TAP), which allows the FDA as a government agency to purchase USP RF, related products, and publications at discounted prices or free of charge.

The PQM in-country consultant participated in the FDA 50th anniversary program held at the FDA offices in Alabang, Muntinlupa City and exhibited photographs of the PQM project. These photos were displayed in the main lobby for public viewing.

The FDA received ISO 9001:2008 certification in May 2013.

### **Extend assistance to National Center for Disease Prevention and Control (NCDPC) of the Department of Health (DOH) to enhance National Tuberculosis Program (NTP)**

The PQM in-country consultant:

- Attended the Linking Initiatives and Networking to Control Tuberculosis Project event “Recognizing Legacies, Breaking New Ground in TB” in November in Makati City
- Attended and presented at a year-end consultative workshop held by the National TB Program of the Infectious Disease Office under the National Center for Disease Prevention and Control held in November in Iloilo City
- Joined the Inter-CA Technical working Group on TB to strengthen communication between stakeholders and partners and presented PQM activities at the Inter-CA Workshop
- Participated in the USAID/OH Start-Up Workshop and prepared a mini-exhibit to showcase the PQM program
- Exhibited at the DOH – USAID Bilateral Health Portfolio: Launch of New Health Projects and Technical Consultation Workshop at Pan Pacific Hotel, Manila. A Minilab<sup>®</sup> was displayed and project flyers distributed to showcase the PQM program

PQM met with TB partners in September 2013 to discuss project updates and possible collaboration with Innovations and Multisectoral Partnerships to Achieve Control of Tuberculosis (IMPACT) and Systems for Improved Access to Pharmaceuticals and Services (SIAPS).

### **Obtain evidence-based quality data on selected generic anti-infective medicines**

PQM staff met with FDA's chief of lab services to discuss plans to create a list of chosen generic medicines to be compared to brand-name imported products. This activity aims to provide evidence-based data on the quality of generic versus branded products using full compendia specifications. If warranted, the findings will be used for promoting the use of generic pharmaceutical products that would be more affordable and accessible to the Filipino people.

### Challenges

Frequent natural disasters negatively impacted program operations and thus delayed the progress of many activities. Also, there are delays in sample collection and testing due to the inconsistency of Minilab<sup>®</sup> staff work schedules. In connection to this, the regional offices were also busy due to the preparations for the ISO 9001:2008 certification which created some human resource shortages.

## **VIETNAM**

### Background

PQM has been active in providing technical assistance to Vietnam since 2003 to improve the quality of essential medicines by building the capacity of National Institute of Malaria and Parasitology and Entomology (NIMPE), Drug Administration of Vietnam (DAV) and National Institute of Drug Quality Control (NIDQC) to improve the quality of medicines they register, supply, and use in priority health programs. PQM has also been tasked with capacitating selected local pharmaceutical manufacturers to produce finished dosage form methadone according to internationally accepted GMP. In addition, PQM has helped set up an MQM program for anti-infective and opportunistic infection (OI) products.

### Key Activities

#### **Provide TA for local production of methadone and procurement of methadone finished products for the Vietnam Administration for HIV/AIDS Control (VAAC) and Hai Phong and Ho Chi Minh City (HCMC) Provincial AIDS Committees (PACs)**

##### *Local production of methadone*

Throughout FY13, PQM has been following the selection process of qualified local manufacturers at the Ministry of Health and Government of Vietnam. At the beginning, 6 local manufacturers were on the shortlist. DAV, VAAC, and the Inspection Unit under the MOH inspected and chose 5 qualified candidates. The MOH submitted the list to the Government Office for approval. Once it is approved, the MoH will open a national tender to select 1-2 manufacturers during 2013-15. Requirements for bidding have not been determined; PQM will assist the MOH with some suggested criteria.

PQM encouraged a reliable API supplier (Dolder – Switzerland) to visit these 5 local manufacturers to introduce raw materials, and a representative of Dolder was able to meet with four of them.

In January 2013, PQM visited one of the manufacturers, VIDIPHA, to obtain information on its production capacity and distribution of narcotics. VIDIPHA has done a production trial with a limited quantity and is submitting the required documents to request their product license from DAV.

PQM sent a request for authorization to the MOH to provide technical assistance on local production.

##### *Procurement of imported methadone (finished product) at VAAC, HCMC, and Hai Phong PACs using national budget*

PQM has been following up with key partners (VAAC, DAV, HCMC and Hai Phong PACs) to get updates on the bidding process and provide technical assistance. VAAC allocates \$180k and HCMC



PAC allocates \$80k for procurement of finished methadone product. The mechanism for procurement is open tender at national level for VAAC and provincial level for HCMC PAC. It has not been clear how much Hai Phong PAC allocates for methadone procurement. VAAC is waiting for approval from the Vice Minister of the MOH on the bidding plan. After approved, VAAC will open national bidding. The bidding must be finished by December 2013.

In FY13, PQM provided technical assistance to VAAC to develop technical specifications for finished product and dispensing pumps. This activity was done in collaboration with NIDQC and MSH/SCMS; PQM provided VAAC with a template for international bidding which helps VAAC to develop national bidding documents. PQM helped HCMC PAC communicate with DAV to request a guide on national rules/regulations on procurement of methadone.

#### **Provide TA on pharmacovigilance (PV) system within the framework of the Global Fund Round 10 project of the National Drug Information and Adverse Drug Reactions Center at Hanoi University of Pharmacy**

PQM visited the national PV center and, with PQM's technical assistance, the center mapped out all technical assistance available from international agencies regarding GFR10 as well as a 5-10 year operational plan. This mapping document identifies the gaps, available resources, and experts that could be used by all the organizations who need technical assistance. This will help avoid duplication of efforts and streamline support. PQM also introduced a PV expert to the Center. The expert could serve as a consultant for the Center in phase-II of GFR10.

#### **Strengthen the post-marketing surveillance system of opportunistic infections (OI) in the public sector distribution chain**

In FY12, PQM developed a baseline survey protocol and collaborated with the NIDQC and its partners to provide a training workshop on the survey sampling methodology and testing methods for selected OI medicines. In FY13, PQM and NIDQC jointly conducted the survey of OI medicine quality from 46 randomly selected HIV/AIDS treatment centers in 25 PEPFAR-supported provinces. The quality of the most commonly used OI medicines, including Cefaclor, Fluconazole, Azithromycin, Acyclovir, and Sulfamethoxazole/Trimethoprim, were sampled and tested. A total of 101 samples were tested at the NIDQC, HCMC IDQC, and provincial DQCs and all of the samples passed.

#### **Provide technical assistance to NIDQC on the CAPA recommendations of WHO PQ**

In FY12, PQM sent a QMS expert to assess the quality management system, and the recommendations were provided to NIDQC to address non-conformities prior to the WHO PQ re-assessment. In FY13, PQM followed up with NIDQC and WHO on the process of NIDQC's CAPA report submissions to WHO PQ. In May 2013, NIDQC received a WHO PQ re-certification valid through 2015. PQM is following up with NIDQC on some issues where improvement is needed. PQM has also been helping review and provide technical input for NIDQC's new architectural design of its microbiology laboratory, which is under renovation.

#### **Maintain in-country consultant to improve project coordination, implementation, and effectiveness**

The in-country consultant is actively involved in implementing PQM activities, meeting with key partners, and attending local meetings and events to represent the program.

#### Challenges

1. Bureaucracy slowed the selection of in-country manufacturers for methadone finished product and delayed PQM's technical assistance
2. Unclear national rules/regulations/laws for in-country methadone bidding have been challenging
3. Very few foreign suppliers and manufacturers of methadone finished product are interested in the local methadone market. This is a direct constraint for the key partners when opening a national tender and also is an indirect challenge to PQM.

## Europe and Eurasia

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### KAZAKHSTAN

#### Background

PQM began receiving funding from USAID/Kazakhstan in FY13, with the goal of improving the quality of anti-TB medicines produced by the major medicines manufacturers in the country. PQM's technical assistance will enhance the capacity of these manufacturers to comply with international GMPs.

#### Key Activities

##### **Conduct baseline GMP assessments of select ATB medicines manufacturers**

After the Kazakhstan MOH/Pharmaceutical Committee confirmed that only 1 out of 4 potential manufacturers were ready to work with PQM, that manufacturer was scheduled to meet with PQM at USP HQ in August to discuss their new facility layout and other critical documentation. That visit was cancelled, and a PQM team now plans to visit the manufacturer in mid-October to conduct a baseline GMP assessment, discuss the WHO PQ process, and evaluate the new facility design and quality documents.

#### Challenges

Obtaining clearance from USAID and the Kazakhstan MOH/Pharmaceutical Committee for a visit was difficult.

### RUSSIA

#### Background

Russia is one of 22 countries with a high burden of tuberculosis (TB): it ranks eleventh on the World Health Organization's (WHO) list of TB endemic countries. PQM provides technical assistance to anti-TB medicine manufacturers, TB clinics, and Roszdravnadzor on issues related to medicines quality.

#### Key Activities

In September 2012, USAID was requested by the Russian Government to cease its activities in Russia and close out all activities by December 31, 2012. A final report on the PQM Program in Russia (September 18, 2009-September 30, 2012) was developed and submitted to USAID.

PQM worked with three Russian second line anti-TB medicines manufacturers—Sintez (Kanamycin and Levofloxacin), Pharmasintez (PAS and Prothionamide), and Akrikhin (Prothionamide). In December 2012, PQM conducted a second audit of Sintez to provide recommendations on improving GMP compliance and assist in dossier compilation. Sintez provided 9-months stability study data. Also, PQM conducted teleconferences with Pharmasintez and meetings with Akrikhin to discuss current issues, progress, and next steps.

PQM informed the TB dispensaries/institutes that carried out the Minilab<sup>®</sup> MQM project that support for the project through PQM is no longer available.

Two Raman spectrometers were purchased by PQM and delivered to the Roszdravnadzor lab. Roszdravnadzor requested that PQM provide technical assistance on establishing the Raman spectral database for anti-TB medicines and conduct training on Raman spectroscopy for medicines quality control laboratory (MQCL) staff.

PQM provided TA to Roszdravnadzor regional MQCLs in ISO 17025 accreditation and WHO PQ. In October 2012, PQM supported an accreditation assessment by ACLASS, an internationally recognized accrediting body, for the lab at Rostov-on-Don. As a result of the assessment, the Rostov-on-Don MQCL was awarded accreditation by ACLASS for seven laboratory tests. It is the first MQCL in Russia to receive ISO 17025 accreditation.

At the request of Roszdravnadzor, PQM conducted training courses on microbiological aspects of medicines quality for MQCL staff in October. The training courses were held at the newly established MQCL in Saint Petersburg. Three training courses were developed and translated into Russian. Fifteen individuals representing eight regional/federal district labs participated in the training courses.

## Latin America and the Caribbean

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### AMAZON MALARIA INITIATIVE (AMI)

#### Background

AMI is an initiative whose primary role is to focus the USAID Latin American and the Caribbean (USAID/LAC) Bureau's financial assistance toward improving malaria control and decreasing national morbidity and mortality in seven South American countries (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, and Suriname). AMI is currently being implemented and coordinated by 4 international partners: Pan American Health Organization (PAHO), the U.S. Centers for Disease Control and Prevention (CDC), Systems for Improved Access to Pharmaceuticals and Services (MSH/SIAPS), and PQM. Recently additional countries in Central America and the Caribbean were included in this initiative. PQM's role in AMI is to strengthen each country's quality assurance and quality control (QA/QC) systems to ensure the quality of antimalarials throughout the supply chain.

#### Key Activities

##### **Strengthening quality assurance and quality control systems**

###### *Build capacity to perform basic testing*

Work programmed to be performed in Bolivia and Nicaragua could not be done because of a lack of response from national stakeholders. In addition, all USAID activities in Bolivia were officially discontinued.

###### *Build capacity to perform testing according to registration methodologies*

The fixed dose combination of artemether and lumefantrine has been adopted by most AMI countries as the first line treatment for *P. Falciparum* malaria. Since analysis of this medicine is complex, PQM delivered a regional training for the compendial analysis of this product; participating in this event, which took place at the Colombia official medicines control laboratory (OMCL), were representatives from Brazil, Colombia, Ecuador, Guyana, Peru, and Suriname. A follow-up proficiency testing for participating labs will be performed during FY14 Q1.

###### *Implement Three-level Approach for sustainable medicines quality monitoring (MQM) activities throughout the supply chain*

###### o Ecuador

Subsequent to suspension of USAID activities in Bolivia and no follow-up on programmed activities in Nicaragua, PQM support was transfer to Ecuador. During a PQM visit to Ecuador to meet country stakeholders, the authorities from the Agencia Nacional de Regulación, Control y Vigilancia Sanitario y Programas de Salud' (ARCSA), the recently established medicines regulatory authority, expressed their commitment to re-establish the Three-level Approach in this country. The draft of regulations for post-marketing surveillance that includes the Three-level approach was finalized by representatives of the Ministry of Health and PQM, and it is currently under consideration for its approval in the MoH.

###### o Guyana

PQM participated in the Antimalarial Supply Chain Management workshop to present the Three-level Approach for medicines quality. During the visit, PQM met with national stakeholders to advance the completion of the memorandum of understanding (MOU) that assigns roles and responsibilities for medicine QA/QC throughout the supply chain. PQM also met with the new head of the FDD to discuss the status of the lab and its role in the implementation of the Three-level Approach. A draft has been circulated among stakeholders, some of which did not provide their

input despite numerous requests by other country partners. No further support is envisioned until the MOU is finalized.

- Peru

Peru's MRA (DIGEMID) has incorporated the Three-level Approach into the regulations for MQM, which are currently awaiting approval at the ministerial level.

### **Increasing the Supply of Quality Assured Medicines**

*Support Farmanguinhos to attain WHO prequalification for Artesunate/Mefloquine (ASMQ) FDC Tablets*  
PQM performed a GMP assessment of the Farmanguinhos facility for the ASMQ FDC. The assessment revealed that Farmanguinhos has the systems in place as well as the capabilities, facilities, infrastructure, knowledge, and skills necessary to manufacture antimalarial finished pharmaceutical products in compliance with GMP. Subsequently, ASMQ was conditionally (until the ASMQ FDC gets WHO PQ) included in the list of medicines that LAC countries may purchase through the Strategic Fund, a mechanism by which PAHO facilitates the purchase of medicines and other products for the countries; this inclusion was based in part on the Brazilian MRA's GMP certification, for which PQM provided extensive TA to Farmanguinhos.

#### *Increase accessibility to USP and Minilab® reference standards through PAHO's Strategic Fund*

Since the purchase of reference standards can be problematic for certain countries, PQM discussed with PAHO the possibility of countries purchasing reference standards through the Strategic Fund. Though it turned out that the Strategic Fund was not the appropriate mechanism, PAHO's reimbursable procurement mechanism could serve that purpose. This has been communicated to certain countries experiencing difficulties in purchasing standards and a general notice will be sent by USP to all OMCL and Health Programs with which it is currently collaborating.

### **Combating substandard and counterfeit medicines**

#### *Evaluate the quality of antimalarial medicines in decentralized areas*

A workshop was organized by DIGEMID that convened current and potential partners. Agreements were established among participating institutions to strengthen the national capacity to monitor the quality of medicines and establish the Three-level Approach as a monitoring mechanism.

### Challenges

#### Bolivia and Nicaragua: Deficient responsiveness by stakeholders.

At the October 2012 AML programming meeting in Bogota, Colombia, Nicaragua requested assistance to implement the Three-level Approach. Several of the activities in Nicaragua were programmed to be performed in conjunction with activities in Bolivia. Although the USAID office in Bolivia was later closed, if Nicaragua would have responded the planned activities could have been done in that country.

#### Guyana: Failure to follow-up on compromises by critical stakeholders

Several stakeholders, independent of each other, are involved in the QC of medicines in Guyana, and most of them use rapid screening tests with the Minilab®. In an effort to better coordinate and avoid duplication of efforts, PQM promoted the development of an MOU between the stakeholders to assign roles and responsibilities. Despite multiple attempts, by PQM and other national partners, neither the Medicines Management Unit (responsible for purchases by the MoH) nor the National Malaria Control Program (NMCP) joined the efforts to finalize this essential document.

#### Brazil: Incomplete implementation of QC activities in decentralized endemic areas

Use of rapid screening tests to perform routine QC of antimalarials in endemic decentralized areas would be of great benefit, particularly in light of the recent report of resistance to artemisinin in border areas in neighboring Suriname and Guyana. Plans to assist the NMCP to implement this have been put on hold because of different QC programming by the MRA (ANVISA), which does not provide the coverage and the rapidity required for the current situation.

## **GUATEMALA**

### Background

PQM performed a study on the quality of emergency obstetric and newborn medicines in the Santa Rosa Health Area, Guatemala, in 2011; this study was part of a two-country study requested and financed by USAID's Maternal and Child Health Latin American and the Caribbean (MCH-LAC) Bureau. Several quality issues were uncovered during that study, including, (1) a 27% failure rate of the tested medicines; (2) storage deficiencies at central and peripheral facilities; (3) technical capability gaps at the Unidad de Medicamentos from the Laboratorio Nacional de Salud, Guatemala's Official Medicines Control Laboratory (OMCL); and (4) QC procedural and documentary deficiencies during procurement of medicines by the Ministerio de Salud Pública y Asistencia Social. In FY11, USAID/Guatemala obligated funds for PQM to address some of those issues through a work plan presented to and approved by the Vice Minister of Health and USAID.

Using funds obligated in FY12, PQM will continue strengthening QA/QC systems in Guatemala by advancing some of the work addressed in the last year and expanding the scope of work.

### Key Activities

#### **Strengthening quality assurance and quality control systems**

*Improve processes of evaluation of medicines' quality certificates for purchases made by the Ministry of Public Health and Social Services & Strengthen the legal and regulatory framework*

PQM delivered a workshop in December to discuss current practices, identify necessary changes in the required documents, and define the necessary SOPs to be developed for purchases made by the MoH. The workshop was attended by 22 staff from the MRA (DRCPFA), the Logistic Department of the Ministry of Health, the OMCL, the Vice-ministry of Hospitals, and decentralized Departmental Health Offices. It was agreed that a Certificate of Analysis instead of a Certificate of Quality, and additional documentation, will be required from manufacturers. The final draft of the new template for Certificate of Analysis has been reviewed by PQM and has been submitted for approval to the Chief of the National Laboratory of Health.

During the workshop the issue of low fees charged to manufacturers was brought to the attention of the MRA (DRCPFA), and in subsequent meetings, to the attention of the Ministry of Health, Technical Vice-Minister of Health, and General Director of Regulation. PQM provided extensive documentation to the health authorities, and currently there is a project in place to evaluate the issue for an increase in registration fees.

#### *Building regulatory capacity*

Installing internet-based registration software (Web SIAMED) will allow processes to be performed online, enabling a more rapid and agile process of follow-up and communications for manufacturers, the DRCPFA, and the OMCL. Critical IT equipment was donated to the DRCPFA, and the installation process is well advanced with all phases to be completed by the end of FY14 Q1. A registration renewal pilot with selected manufacturers will be performed during October 2013.

A GMP training workshop was delivered to 17 staff from the DRCPFA-MRA, which included a visit to a local manufacturer. In addition, a Good Storage and Distribution Practices (GSDP) training workshop was delivered to 30 staff from the DRCPF, public hospitals, the Institute of Social Security, a governmental procurement & distribution organization and three NGOs involved in supply management.

#### *Build capacity to perform quality control testing in compliance with internationally recognized standards*

The objective is that the Medicines Unit (UM) at the National Health Laboratory (LNS) will become WHO PQ and/or ISO 17025 accredited for specific analytical methodologies. Towards this end, PQM followed up on corrective and preventive actions (CAPAs) from previous UM-LNS assessments—

CAPAs were received, reviewed, and addressed during a rapid re-assessment performed by staff from the Peru OMCL. In addition, training on Uncertainty Measurement was conducted for lab personnel by staff from the Peru OMCL.

#### *Building QC capacity in decentralized areas*

Training on Minilab<sup>®</sup> use and the implementation of the Three-level Approach was delivered to 24 staff from the MRA, Logistics Department of the MOH, the OMCL, the Vice-Ministry of Hospitals, and decentralized Departmental Health Offices.

#### *Implement QC activities in decentralized areas*

San Marcos Department: A PQM-sponsored study was performed in the San Pedro Sacatepéquez municipality, in the San Marcos Department. 74 samples (26 from the informal market) were collected, including antibiotics, analgesics, and anti-inflammatory products. Medicines were delivered to the OMCL, which performed analysis according to the Three-level Approach. The results of Level 1 indicated that 5 samples failed disintegration (4 metronidazol and 1 trimetoprim/sulfametoxazol) and 1 failed visual and physical Inspection (paracetamol-acetaminophen). 4 samples (1 Erythromycin Estolate and 3 Prednisone) were not analyzed because there is no methodology in the Minilab<sup>®</sup>. From 18 samples analyzed by compendial methods (Level 3), 2 samples failed, one that previously had passed level 2 testing and one that had failed. The study report will be available during FY14 Q1.

Huehuetenango Department: A protocol is currently being completed and will be presented by November 2013. A list of medicines has been completed and will be sampled in the public sector (health areas and hospitals). It was agreed in a meeting with the Technical Vice-Minister of Health and the General Director of Regulations that this activity will serve as a pilot to assess the new modality of the Three-level Approach for MQM by the DRCPFA and regional authorities; subsequently, during FY14, this approach may be extended to additional areas

#### Challenges

The Ministry of Health has four Vice-Ministries, and each of them deal with medicines management. One of these is responsible for MOH purchases while two others operate independently at the provincial level in public facilities and hospitals. This creates difficulties for the implementation of QC at different stages of the supply chain. In addition, the regulatory agency that has the mandate for QC in the country lacks the resources to perform post-marketing surveillance.

Progress towards WHO PQ and/or ISO 17025 accreditation has been slow. Changes in authority at the management and lab levels make pursuing this difficult.