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PROMOTING THE QUALITY OF MEDICINES

Promoting the Quality of Medicines

ANNUAL PERFORMANCE REPORT

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PROMOTING THE QUALITY OF MEDICINES

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EXECUTIVE SUMMARY

The Promoting the Quality of Medicines (PQM) program is a partnership between the U.S. Pharmacopeial Convention (USP) and the United States Agency for International Development (USAID). PQM is USAID's response to the growing challenge posed by the proliferation of falsified and substandard medicines. By providing technical assistance to developing countries, PQM helps to build local capacity in medicines quality assurance systems, increase the supply of quality medicines to priority USAID health programs, and ensure the quality and safety of medicines globally.

Ensuring the quality of medicines used in public health treatment programs is critical. Without this quality assurance, investments in health programs to treat diseases such as HIV/AIDS, tuberculosis, and malaria may be wasted, and desired health outcomes compromised.

PQM uses a systems-based approach to achieve its objectives: 1) build capacity and strengthen quality assurance (QA) systems; 2) help increase the supply of quality-assured medicines; 3) combat falsified, substandard, and unapproved medicines; and 4) advance global advocacy on medicine quality. This FY15 Annual Performance Report (APR) documents accomplishments and progress toward those objectives:

- 21 National Regulatory Authorities enhanced their review and evaluation process by adopting good pharmaceutical practices, strengthened quality control laboratories capacity, and improved inspection of pharmaceutical premises.
- 61 manufacturers in 17 countries were supported with preparations of dossiers to help them achieve World Health Organization prequalification. PQM supported local-manufacturer-supplied chlorhexidine gel that was distributed in place of an imported version suspected to be connected with serious adverse events. A PQM-supported manufacturer also participated in the Global Fund's Expert Review Panel, potentially expanding the pool of qualified sources for the procurement of an important second-line tuberculosis medicine.

- 17 countries conducted medicine quality monitoring and surveillance, increasing the number of records in the Medicines Quality Database to over 13,000. Results from testing thousands of samples have been used for regulatory decisions in multiple countries, including product removal from the market or blacklisting of the supplier.

The FY15 APR provides details on the accomplishments mentioned above and on the rest of the PQM work during the period under review. While acknowledging implementation challenges as well as efforts toward an effective and agile program, the report articulates the program's drive to tailor interventions toward local ownership and sustainability. Host governments' leadership and collaboration by in-country partners has enabled PQM's support to strengthen countries' capacity to protect their populations from poor-quality medicines and ensure sustainable manufacturing and supply of priority essential medicines in support of public health programs.

Jude I. Nwokike, Director, PQM Program

"ENSURING THE QUALITY OF MEDICINES USED IN PUBLIC HEALTH TREATMENT PROGRAMS IS CRITICAL."

ABOUT THE PROMOTING THE QUALITY OF MEDICINES (PQM) PROGRAM

COOPERATIVE AGREEMENT NUMBER: GHS-A-00-09-00003-00

The Promoting the Quality of Medicines (PQM) program combats the proliferation of falsified and substandard medicines. Funded by the U.S. Agency for International Development (USAID), PQM is the successor to the Drug Quality and Information (DQI) program, which was implemented by the U.S. Pharmacopeial Convention (USP) from 2000 to 2010. By providing technical assistance (TA) to developing countries, PQM achieves four main goals:

1. Builds local capacity in medicines quality assurance systems
2. Increases the supply of medicines to USAID health programs
3. Ensures the quality and safety of medicines globally
4. Advances global advocacy on medicines quality.

USAID Funding Sources	Global Health Bureau; Office of Health Systems; Office of Health, Infectious Diseases and Nutrition; USAID Country Missions
Name of Implementing Partner	Promoting the Quality of Medicines Implemented by the U.S. Pharmacopeial Convention
Cooperative Agreement Number	GHS-A-00-09-00003-00
Period of Performance	September 18, 2014, to September 17, 2019
Agreement Officer's Representative Team	Mr. Anthony Boni, Pharmaceutical Management Specialist Ms. Elisabeth Ludeman, Pharmaceutical Management Advisor Ms. Tobey Busch, Senior Pharmaceutical Management Advisor
PQM Responsible Staff	Jude Nwokike, Director

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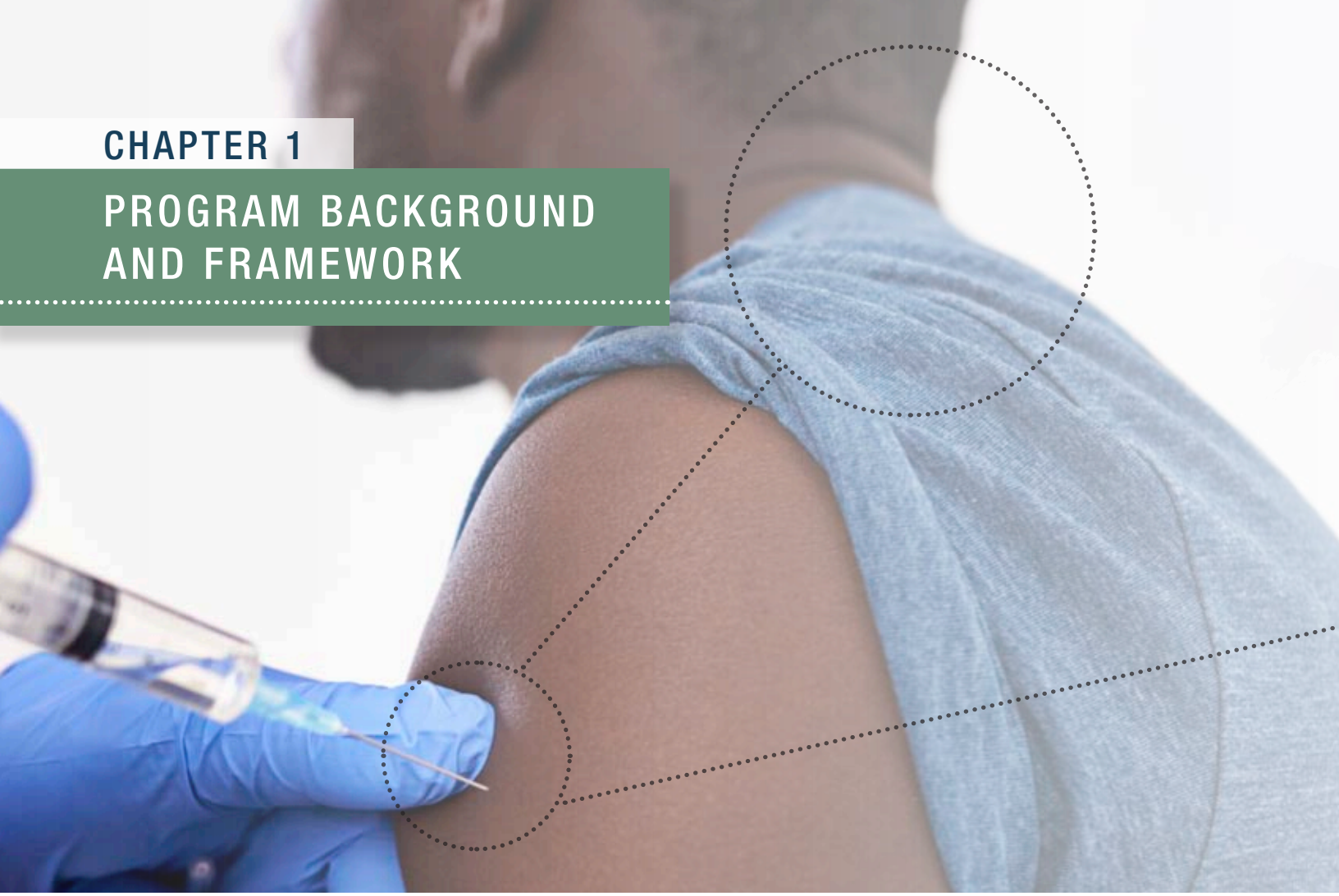
API	Active Pharmaceutical Ingredient
ARV	Antiretroviral
ASEAN	Association of Southeast Asian Nations
ATB	Anti-tuberculosis
BA/BE	Bioavailability/bioequivalence
CEP	Certificate of Suitability to the Monographs of the European Pharmacopoeia
CHX	Chlorhexidine
DQI	Drug Quality and Information Program
ERP	Expert Review Panel
FDA	Food and Drug Administration or Authority
FPP	Finished Pharmaceutical Product
GMP	Good Manufacturing Practices
IMC	Inter-Ministerial Committee
MCH	Maternal and Child Health
MDR-TB	Multi-Drug-Resistant Tuberculosis
MOH	Ministry of Health
MQDB	Medicines Quality Database
MQM	Medicines Quality Monitoring
MRA	Medicines Regulatory Authority
NOMCoL	Network of Medicines Control Laboratories
NQCL	National Quality Control Laboratory
NTD	Neglected Tropical Disease
NTP	National Tuberculosis Control Program
ORS	Oral Rehydration Salts
PEPFAR	President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PMS	Post-Marketing Surveillance
PQ	Prequalification
PQM	Promoting the Quality of Medicines Program
QA	Quality Assurance
QC	Quality Control
QMS	Quality Management System
RDMA	Regional Development Mission for Asia
RH	Reproductive Health
SOP	Standard Operating Procedure
TA	Technical Assistance
TB	Tuberculosis
USAID	United States Agency for International Development
USP	U.S. Pharmacopeial Convention
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis



CHAPTER 1

PROGRAM BACKGROUND AND FRAMEWORK

Since 1992, USP has partnered with USAID to help developing countries overcome life-and-death issues arising from falsified and substandard medicines. PQM serves a critical mission: it ensures the quality, safety, and efficacy of medicines essential to USAID priority diseases—particularly malaria, HIV/AIDS, tuberculosis, and maternal and child health (MCH)—by providing a unique set of services to stakeholders that manufacture, test, and regulate medicines. PQM reduces the prevalence of poor-quality medicines and improves supply of quality-assured medicines. The program has presence offices and staff in four countries (Ethiopia, Indonesia, Nigeria, and Philippines) and implements programs in 34 non-presence countries.

PQM's purpose is urgent because poor-quality medicines threaten public health around the world, especially in low- and middle-income countries. For example, poor-quality medicines can exacerbate antimicrobial resistance, cause treatment failure, and trigger adverse reactions, all of which increase morbidity and mortality.

What's more, poor-quality medicines represent not only a substantial threat to public health, but also a terrible waste of scarce resources. In short, poor-quality medicines undermine decades of USAID health investments.

Using a systems-based approach, PQM offers TA in several areas to achieve four strategic objectives. Many of these approaches are replicated globally, but tailored to fit

4 PQM'S WORK RESTS ON OBJECTIVES

2009–2019

1. BUILD CAPACITY AND STRENGTHEN QA SYSTEMS
2. HELP INCREASE SUPPLY OF QA MEDICINES
3. COMBAT FALSIFIED, SUBSTANDARD, AND UNAPPROVED MEDICINES
4. PROVIDE TECHNICAL LEADERSHIP

the needs of individual countries or regions. These approaches include building the capacity of medicines regulatory authorities (MRAs) to review and approve quality essential medicines and strengthen their ability to protect their own population from poor-quality medicines. PQM works with national and regional regulatory authorities to build sustained capacity for medicines evaluation, manufacturing inspection, and surveillance. PQM supports national quality control laboratories (NQCLs) through hands-on training and TA to improve laboratory standards, with one goal being to assist those labs to attain internationally recognized certifications, such as International Organization for Standardization ISO accreditation and/or World Health Organization (WHO) prequalification (PQ).

PQM also helps NQCLs implement or, as appropriate, improve post-marketing surveillance (PMS) programs. For example, consider field-based, medicines quality monitoring (MQM). MQM allows laboratory staff to collect medicine samples at sentinel sites. These samples are screened in the field using Global Pharma Health Fund Minilab™ and subsequently undergo confirmatory testing in the lab.

PQM's systems-based approach also extends to medicines manufacturers. PQM experts in good manufacturing practices (GMP) travel to manufacturing sites to help companies improve their GMP compliance and to develop the dossiers manufacturers need to qualify for the WHO PQ program.

CHAPTER 2

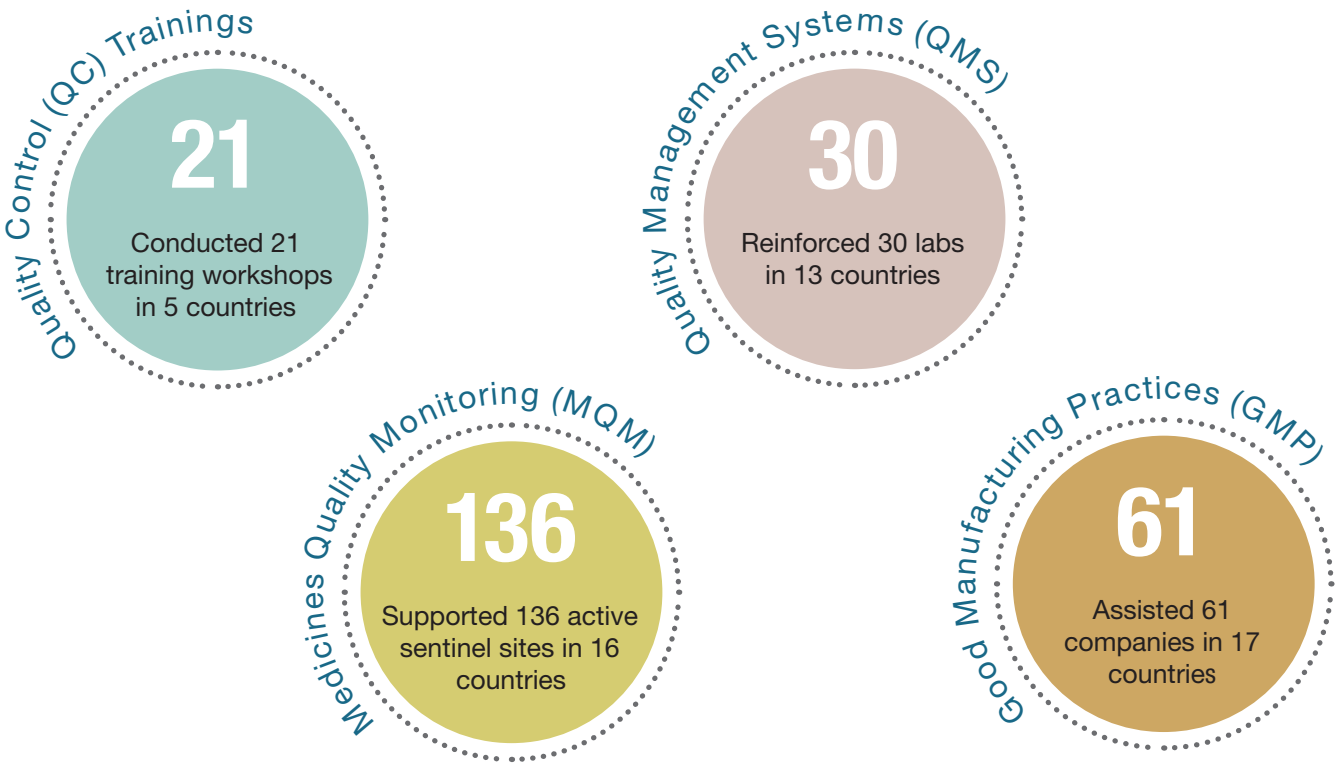
PROGRESS TOWARD RESULTS

THE FOLLOWING TABLES HIGHLIGHT PQM'S FY15 ACCOMPLISHMENTS:

CONTRIBUTIONS TOWARD ACHIEVING THE INTERMEDIATE RESULTS

RESULT AREA	PQM GLOBAL PROGRESS
IR1: National regulatory systems strengthened	21 PQM Core, Country, and Regional portfolios supported National Regulatory Authorities in FY15 to strengthen their capacity for dossier review, registration of priority essential medicines, and adoption of good pharmaceutical practices; as well as strengthen laboratory capacity and inspection of pharmaceutical premises. PQM supported the development of 11 guidelines and 42 Standard Operating Procedures (SOPs) for regulatory bodies in FY15.
IR2: Availability of quality medicines increased	PQM support to manufacturers contributed to the approval of 4 products in FY15. In FY15, 4 dossiers were submitted and accepted by WHO PQ with PQM support. With PQM support in FY15, 1 Certificate of Suitability to the Monographs of the European Pharmacopoeia CEP and 1 WHO Expert Review Panel (ERP) risk category 1 were obtained. A total of 10 PQM portfolios contributed to improving the supply of quality-assured medicines in FY15.
IR3: Incidence of falsified, substandard, and unapproved medical products reduced	17 PQM countries supported medicines quality monitoring and quality surveillance activities in FY15. The Medicines Quality Database (MQDB) now contains more than 13,000 records. The results obtained from the testing of thousands of samples were used for regulatory decisions. 5 regulatory actions were taken by the Liberian Medicines and Health Products Regulatory Authority and the Ghana Food and Drug Authority and leading to product removal from the market or blacklisting of suppliers.
IR4: Actions taken to support quality medicines at regional and global level increased	PQM held presentations workshops, and made several technical contributions to international discussions on medicines quality. PQM co-authored 3 articles published by the *American Journal of Tropical Medicine and Hygiene*. PQM portfolios that worked on medicines quality advocacy in FY15 include the Cross-Bureau, Regional Development Mission for Asia (RDMA), Liberia, and Senegal.

RESULTS BASED ON PQM'S TECHNICAL AREAS



CONTRIBUTIONS TO THE USAID HEALTH PROGRAMS INDICATORS

INDICATOR	2015 PROGRESS
Number of laboratories provided with equipment/supplies	30[1]
Number of laboratory instruments/equipment installed, calibrated, and qualified	20[2]
Number of President's Emergency Plan for AIDS Relief (PEPFAR)–supported testing facilities (laboratories) that are recognized by national, regional, or international standards for accreditation or have achieved a minimal acceptable level toward attainment of such accreditation	3[3]
Number of antiretroviral (ARV), opportunistic infection (OI), tuberculosis (TB), antimalarials, and MCH PMS samples collected and tested	3,436[4]

[1]Data from 24 countries (Amazon Malaria Initiative, Angola, Benin, Burkina Faso, Burma, Cambodia, Ethiopia, Ghana, Guatemala, Guinea, Indonesia, Kazakhstan, Kenya, Liberia, Mali, Mozambique, Nigeria, Pakistan, Philippines, RDMA, Senegal, Uzbekistan, Vietnam, and West Bank/Gaza)
[2]Data from 24 countries (Amazon Malaria Initiative, Angola, Benin, Burkina Faso, Burma, Cambodia, Ethiopia, Ghana, Guatemala, Guinea, Indonesia, Kazakhstan, Kenya, Liberia, Mali, Mozambique, Nigeria, Pakistan, Philippines, RDMA, Senegal, Uzbekistan, Vietnam, and West Bank/Gaza)
[3]Ethiopia, Indonesia, Mozambique, and Vietnam
[4]Data from 21 countries (Amazon Malaria Initiative, Benin, Burkina Faso, Burma, Cambodia, Ethiopia, Guatemala, Guinea, Indonesia, Kazakhstan, Kenya, Liberia, Mali, Nigeria, Pakistan, Philippines, RDMA, Senegal, Uzbekistan, Vietnam, and West Bank/Gaza)

DETAILED DISCUSSIONS OF PQM'S INTERMEDIATE RESULTS ACCOMPLISHMENTS

IR1 | NATIONAL REGULATORY SYSTEMS STRENGTHENED

PQM works with national and regional regulatory authorities to build sustained capacity for medicines evaluation, manufacturing inspection, and surveillance. In FY15, the PQM Program provided support to national authorities toward strengthening their regulatory systems, including support to the Ethiopian Food, Medicine, and Health Care Administration, and Control Authority (FMHACA) with funding from PEPFAR through USAID/Ethiopia. PQM also receives funding from the President's Malaria Initiative (PMI) to provide technical, strategic, and operational support to strengthen the quality assurance of antimalarial medicines in Ethiopia. In order to monitor the quality of the country's antimalarial medicines, an MQM program has been established, which PQM supports by training technical staff on sampling and testing of medicine samples, and by evaluating medicines quality. PQM worked with FMHACA leadership to restructure the agency. As a result, Proclamation #661 (2009) was revised and the agency's efficiency was maximized. PQM advocated for the inclusion of ARVs, antimalarials, reproductive health (RH), anti-TB medicines, and vaccines into a fast-track system, leading to reduction in the average time to register new applications for high-priority medicines from 25 months to 17. In Ghana, PQM focuses on providing technical assistance to the Ghana Food and

Drugs Authority (FDA). The Ghana FDA, with support from PQM, established a functional MQM program throughout the country and strengthened the capacity of the FDA's NQCL. During FY15, PQM helped the Ghana FDA physico-chemical lab take corrective actions after an American National Standards Institute-American Society for Quality (ANSI-ASQ) National Accreditation Board (ANAB) audit detected minor shortcomings. As a result, the FDA lab maintained its accreditation status.

SANAS group shot

A significant accomplishment in FY15 was the ISO 17025 accreditation of the Kenya NQCL from the South African National Accreditation System (SANAS) in multiple pharmaceutical testing methods on April 14, 2015. Prior to the ISO/IEC 17025:2005 accreditation, the NQCL had obtained WHO PQ status in 2008. In 2011, with PQM assistance, the NQCL started the process of ISO 17025 accreditation. In addition to advancing the lab toward ISO 17025 accreditation, and as part of reinforcing the capacity of the NQCL, PQM has provided TA to lab staff through the Network of Medicines Control Laboratories (NOMCoL). NOMCoL provides a forum to share best practices at the national level on medicines quality, and offers laboratories the opportunity for South-South collaboration on quality control (QC) of medicines. Kenya is a charter member of NOMCoL. The dedicated support toward ISO 17025 accreditation and benefits from participation in NOMCoL facilitated the NQCL to eventually obtain the ISO 17025 accreditation from SANAS. Kenya NQCL thus became one of the few labs in Africa with both WHO PQ and ISO 17025 accreditation. Over the past years, PQM has supported the Liberian Medicines and Health Products Regulatory Authority (LMHRA), which was established in September 2010. The LMHRA took its first official enforcement action in 2011 with the recall of three antimalarial medicines from the Liberian market. In FY15, the LMHRA QC lab scored #1 for the second time among labs

Accreditation ceremony

$980 thousand

PQM helped secure $980,000 in grant funding for FY15 from the Global Fund to support TB medicines.

ISO 17025

One of the major accomplishments of FY15 was the ISO 17025 accreditation of the Central Drug Control Laboratory Yaba, Lagos.

in the NOMCoL Network. Building a robust MQM program, along with a strong registration system, has enabled LMHRA to impose continuous and decisive regulatory measures against purveyors of poor-quality medicines in FY15. PQM sits on the Indonesian national Technical Working Group under Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) and provides input into the overall leadership, management, coordination, and proposal development for the National Tuberculosis Control Program (NTP) and the Country Coordinating Mechanism, and under select Health Systems Strengthening grants. PQM provides technical input into the development of grant proposals under the New Funding Mechanism of the Global Fund, especially with a focus on HIV and TB joint proposals. PQM helped secure $980,000 USD in grant funding for FY15 from the Global Fund to support the testing of TB medicines at Badan Pengawas Obat dan Makanan (BPOM) provincial QC labs. PQM contributed to the National TB Program's five-year Strategic Action Plan by integrating budgeted activities on QA of TB medicines and support for local manufacturers into the Ministry of Health's (MOH's) strategy. PQM has also been collaborating with the Association of Southeast Asia Nations (ASEAN) Secretariat in Jakarta to develop regional programs for training and building capacity on GMP inspection under Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme and on bioavailability/bioequivalence (BA/BE) studies under the auspices of the ASEAN Pharmaceutical Products Working Group in light of ASEAN harmonization in 2015. In order to meet the interest of the Indonesia National Agency of Food and Drug Control for system improvement, PQM supervised and facilitated the completion and release of 42 SOPs (toward a goal of 55 SOPs) for the Pendidikan Tata Boga dan Busana (PTBB) national QC laboratory, and facilitated the completion of the draft PTBB Quality Manual, which was subsequently approved.

25

Previous number of months to register.

17

Average number of months to register new applications for high-priority medicines in Ethiopia.

In FY15, PQM also received funding for maternal and child health activities to carry out post-marketing surveillance, enhance the registration processes of MCH medicines, support MCH medicines manufacturers to improve GMP compliance, and enable them to manufacture new children's formulations. In Nigeria, the PQM Program provides technical support to the National Malaria Control Program (NMCP) and the National Agency for Food and Drug Administration and Control (NAFDAC). One of the major accomplishments of FY15 was the ISO 17025 accreditation of the Central Drug Control Laboratory Yaba, Lagos. This achievement enables Nigeria to carry out reliable analysis that can be globally trusted and accepted. PQM also provides TA to Nigerian manufacturers that produce oral rehydration salts (ORS), zinc sulfate tablets, chlorhexidine (CHX) digluconate gel, and other MCH priority commodities for the United Nations (UN) Commission on Life-Saving Commodities for Women and Children.

PQM serves as an integral partner to the Philippines FDA. By introducing and building up internationally accepted quality standards, guidance, processes, and procedures, PQM has enhanced the Philippines FDA's ability to evaluate and register pharmaceutical products. Alongside the Philippines FDA and the ASEAN, PQM convened a training workshop on BA/BE studies to advance the Pharmaceutical Harmonization Initiative. The workshop drew 40 representatives from Indonesia, Vietnam, Thailand, Malaysia, and the Philippines. PQM also provides TA to the Department of Health National Center for Pharmaceutical Access and Management, National Center for Disease Prevention and Control NTP, selected local government units, and regional offices in an effort to strengthen medicines QA/QC systems, with emphasis on post-marketing surveillance through MQM for anti-tuberculosis (ATB) and other essential medicines available in the Philippines, and through local pharmaceutical manufacturers toward the WHO PQ.

IR2 | AVAILABILITY OF QUALITY MEDICINES INCREASED

National TB Control programs in most of the high-burden countries face a myriad of challenges in scaling up efforts to control the spread of multi-drug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB). PQM collaborates with partners and stakeholders including NTPs, GFATM, Global Drug Facility, and the Green Light Committee to provide a multipronged approach that increases the supply of quality-assured ATB medicines from local and imported sources. PQM support expands the availability of good-quality, second-line anti-TB medicines (SL-ATBs). PQM then aids SL-ATBs manufacturers to expand the global supply of quality-assured medicines. During the year under review, PQM provided support to manufacturers for key essential TB medicines, including kanamycin, capreomycin, levofloxacin, and moxifloxacin. In Kazakhstan, a country WHO noted as among the 27 high-burden countries for MDR-TB in the world, combating MDR and XDR-TB is a priority in the 2011–2015 Health Care Development Program. The national budget for TB control has been increased to enable rapid scale-up of treatment for MDR-TB patients. Despite these efforts, universal access to treatment remains elusive. 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 TA enhances the capacity of these manufacturers to comply with international GMP. In FY15, PQM collaborated with the Regional Economic Cooperation/Chemonics,

to sponsor the pharmaceutical plenary session of the 4th Central Asia Trade Forum in Almaty. The forum provided an opportunity to meet with the Kazakhstani manufacturers of SL-ATBs. As a result of the meeting, Nobel Almaty Pharmaceutical Factory purchased the active pharmaceutical ingredient (API), manufactured a pilot batch of moxifloxacin finished pharmaceutical product (FPP), and started stability studies of the finished product. Having a reliable source of the moxifloxacin API will allow Nobel to manufacture high-quality FPP and supply a high-quality anti-TB medicine to the Kazakhstani market.

Since 2009, PQM has worked with WHO, UNICEF, and USAID to roll out zinc tablet and ORS supplementation to manage children's diarrhea, especially for children under the age of five. To increase the availability of quality zinc, ORS, and other MCH products, like CHX, PQM has assessed manufacturers' QC testing and GMP. In 2012, the UN Commission on Life-Saving Commodities for Women's and Children's Health was formed as part of the Every Woman Every Child movement. The goal is to increase access and use of essential medicines, medical services, and health supplies that address causes of death during pregnancy, childbirth, and childhood. Many of the recommendations that evolved from the commission overlap with key USAID priorities addressed by PQM; therefore, the aid from PQM fulfills the goals of both initiatives.

In Nigeria, PQM provided TA to Drugfield Pharmaceuticals, a manufacturer of CHX gluconate and boosted the monthly production capacity supplied to the Nigerian market and environment. The Drugfield-manufactured CHX gel provided cover when the CHX solution was withdrawn due to safety concerns in Nigeria. The morbidity and mortality of newborn infants from umbilical cord infections is a major problem in Pakistan. Working alongside other international agencies, including USAID, UNICEF, and WHO, the PQM Program is introducing quality-assured CHX in the country. To improve manufacturing quality standards, PQM provides TA to potential manufacturers of CHX gel and strengthens the capacity of the Drug Regulatory Authority of Pakistan (DRAP) to improve medicines registration processes and post-marketing surveillance and advance its QC laboratories toward international standards and practices.

One major component of Ending Preventable Child and Maternal Deaths (EPCMD) is the scaling-up of proven solutions in newborn health. CHX digluconate 7.1%—an effective and inexpensive WHO-recommended

treatment against sepsis during the first week of life—is one of those proven solutions. EPCMD overlaps with strategic objective #1 of the Every Newborn Action Plan to strengthen and invest in maternal and newborn care during labor, birth, the first day of life, and the first week of life. By equipping manufacturers with the technical expertise to meet global demand, PQM is contributing to saving the lives of children around the world.

More than 1 billion people—one-sixth of the world's population—suffer from one or more neglected tropical diseases (NTDs). These diseases are neglected because they've been eradicated in most developed areas of the world and persist only in less-developed regions. The WHO invites manufacturers to submit expressions of interest for product evaluation to the prequalification program for NTD medicines, including albendazole, mebendazole, dithylcarbamazine, and praziquantel. These four single-ingredient medicines have been effective in treating soil-transmitted helminthiasis, lymphatic filariasis, and schistosomiasis, and are included in the WHO Model List of Essential Medicines. With funding from USAID, PQM performs GMP assessments of manufacturers to ensure that their products are of high quality. In order to help manufacturers achieve WHO PQ status, PQM recommends ways to strengthen their QA systems and GMP programs. PQM completed the Biopharmaceutics Classification System characterization study for praziquantel drug substance.

> **"PQM is contributing to saving lives of children around the world by providing technical expertise to manufacturers."**

IR3 INCIDENCE OF FALSIFIED, SUBSTANDARD, AND UNAPPROVED MEDICAL PRODUCTS REDUCED

The WHO Substandard/Spurious/Falsely Labeled/Falsified/Counterfeit (SSFFC) Global Surveillance program and Monitoring program implemented by the Safety and Vigilance (SAV) unit of the Essential Medicines and Health Products (EMP) department collaborates with the PQM Program to enhance the training provided on the WHO's Rapid Alert System. At a regional workshop for 11 African Countries on Global Surveillance and Monitoring of Medicines Quality and Safety held in Ethiopia, PQM collaborated with the WHO's program to train participants on sampling and laboratory support. PQM also demonstrated the use of counterfeit/falsified detection technologies to the workshop. Follow-up joint training with the WHO/EMP/SAV was also conducted in Vientiane, Laos. In Benin, PQM trained 10 staff members from the NQCL in sampling and screening of antimalarial medicines. PQM then facilitated the collection of 172 samples from public, private, and informal markets in the Cotonou area. NQCL screened the samples using a Minilab kit.

PQM partnered with the Ghana FDA to complete the first round of MQM for antimalarial samples, issued a report to USAID/Ghana, and tested oxytocin and ergometrine. Based on the MQM results, Ghana FDA seized and destroyed dangerous and unregistered uterotonics from various health facilities. In Kenya, the Pharmacy and Poisons Board (PPB), with support from PQM, created a sustainable protocol for MQM and established five sentinel sites for monitoring antimalarial medicines. Based on MQM findings, PPB took regulatory actions by jailing the sellers of counterfeit antimalarials,

closing a manufacturer for selling poor-quality and unregistered samples, recalling nonconforming samples, and destroying expired antimalarials. With a focus to enhance the capacity of the Direction de la Pharmacie et des Médicament (DPM) and the Laboratoire National de la Santé (LNS) for drug registration and medicines quality control, respectively, the PQM Program provided support to LNS to sample and test 400 antimalarial medicines across three sentinel sites in the Bamako district. LNS verified the results obtained in the field, and referred the information on failed samples to DPM for follow-up. LNS also used WHO's Rapid Alert System to communicate the findings to WHO Mali.

With support from PQM, NAFDAC organized and carried out MQM activities for 800 packs of antimalaria drugs collected throughout the country. Of the 800 samples analyzed, 3.6% failed, while 96.4% were of good quality. This is a considerable improvement upon 2010–2012, when a survey by NAFDAC revealed a failure rate of 19.6%. Senegal launched the MQM program in five sentinel sites in 2002 to monitor antimalarials. In 2009, the program expanded to four additional sites and began covering antiretrovirals, antituberculars, and contraceptive products. Senegal's National Laboratory for Medicine Quality Control (LNCM), with support from PQM, has been working to obtain ISO 17025 accreditation. As a result, the lab is better equipped to comply with international quality management system (QMS) standards. PQM facilitated the transition of MQM from academia to the DPM, as well as the integration of NQCL and the National Health Programs (NHP). Although it has limited funding from PQM, MQM is fully integrated and supported by annual contributions from NHP, DPM, and the NQCL.

2015 inter-ministerial committee (IMC) workshop

3.6%

Of the 800 samples analyzed in Nigeria, 3.6% failed, while 96.4% were of good quality.

IR4 ACTIONS TAKEN TO SUPPORT QUALITY MEDICINES AT REGIONAL AND GLOBAL LEVEL INCREASED

To influence national and international medicine QA agendas, PQM plays a leadership role in technology and advocacy. For example, PQM attends top international meetings and proposes activities for medicines quality issues in regional and global forums. PQM also publishes information about current issues in medicines quality. During the year under review, PQM co-authored three articles that were published in the supplement "The Global Pandemic of Falsified Medicines: Laboratory and Field Innovations and Policy Perspectives" in the *American Journal of Tropical Medicine and Hygiene*. These articles highlighted 17 studies on the global proliferation and peril of ineffective, potentially toxic, substandard, and falsified medicines.

"MORE THAN
1 BILLION
PEOPLE SUFFER
FROM ONE OR MORE NEGLECTED
TROPICAL
DISEASES."

CHAPTER 3

CHALLENGES

The PQM Program encountered some challenges in the implementation of the work plans during the year under review. Some of these challenges are listed below and may have been related to events that were beyond the control of the technical assistance recipients or the PQM Program itself.

- The Ebola outbreak in West Africa impacted the implementation of activities, resulting in delays in the deployment of interventions proposed in the work plans for Liberia and Guinea.
- Security issues in Pakistan and the West Bank/Gaza prevented or delayed implementation.
- Many of the countries PQM supports experienced delays in the recruitment of staff. Such delays result in the lack of skilled staff to manage/operate national and regional labs and the lack of well-defined roles and responsibilities for the rest of the other regulatory functions.
- Delayed approval of proposed activities and challenges with fitting into the other priorities of the host country partners resulted in reducing what could be achieved within the year.
- Understaffed partners, high turnover of government staff, and organizational restructuring affected implementation.
- Local manufacturers' demand for special incentives to participate in PQM initiatives to improve GMP compliance and WHO PQ was experienced.

CHAPTER 4

MANAGEMENT OVERVIEW

PQM introduced several initiatives to make its program management extra efficient and agile. At the beginning of FY15, new systems were necessary to strengthen the process for the development of work plans and capture the results.

The new leadership of PQM therefore introduced the Work Planning and Implementation Life-cycle Approach (PILA). This approach starts with the review of the preceding work plan to identify gaps and new opportunities, and presents a timeline for the design of the subsequent year's work plan and its target-driven implementation.

6 THE PILA AIMS TO ACHIEVE THE FOLLOWING GOALS

1. TIMELY SUBMISSION OF ANNUAL WORK PLANS BY AUGUST 31
2. REVIEW OF WORK PLAN IMPLEMENTATION, TWICE YEARLY (IN ADDITION TO THE ROUTINE MONTHLY PORTFOLIO-REVIEW MEETINGS)
3. RIGOROUS BUDGET MANAGEMENT (80% OF WORK PLANS IMPLEMENTED WITHIN BUDGET)
4. SUCCESSFUL IMPLEMENTATION (60% OF WORK PLANS FULLY IMPLEMENTED DURING THE FISCAL YEAR)
5. RESULTS CAPTURING AND KNOWLEDGE MANAGEMENT, TRACKING INDICATORS RELEVANT TO THE WORK PLAN AND MONITORING THEIR PROGRESS OVER THE BASELINE
6. ANNUAL REVIEW OF IMPLEMENTATION AND CONSOLIDATION OF LESSONS LEARNED

To ensure that the work plan is submitted on time, which is a critical part of this new initiative, PQM management organized a mandatory, week-long preplanning meeting for PQM staff on July 20–24, 2015. As a result, the FY16 work plans were submitted on time, and one month into the new fiscal year, 8 out of 25 work plans submitted by PQM were approved for implementation.

Other changes initiated by the management:

- A new cadre of program coordinators was established to support the coordination, backstopping, and programming of portfolios.
- A new position for capacity development and instructional design was created.
- The operations teams of the USP Global Public Health Department were reorganized to better support the program strategies developed for improved management of the field offices.
- A monitoring and evaluation manager was recruited to rollout the monitoring and evaluation systems, monitor the implementation of the activities, and document the results of the program's efforts.
- The PQM Management Team was established, comprising all the managers; a communication guide and an editorial peer review process was introduced.

CHAPTER 5

SUSTAINABILITY

STRENGTHENING HEALTH SYSTEMS THROUGH SUSTAINABLE INTERVENTIONS

Most PQM activities and interventions in countries are designed to strengthen laws, regulations, and policies that protect people from poor-quality medicines. Making this regulatory capacity sustainable is an essential component of institutional change. While requirements may differ among countries, it's important to identify an overarching operational framework based on common elements of sustainable health systems. Based on PQM experience and understanding of medicines QA systems, the following definition for sustainability was crafted:

"The set of physical resources, processes, and regulations that enable an institution or program to operate in compliance with its mandate through financial resources generated in the course of its duties, and/or continuously provided by the system or organization to which it belongs or serves."

The following examples illustrate how PQM worked together with countries to ensure that the relevant institutions take ownership of these processes and ascribe the technical and financial resources needed to ensure sustainability within an operational framework as the one defined above. Most of the examples relate to MQM activities, which require two things:

1. Proper coordination among multiple stakeholders at central and decentralized levels
2. That central institutions—like the MRA and the Official Medicines Control Laboratory (OMCL)—have in place established capabilities and sustainable processes

MQM IN KENYA

Soon after the initiation of the MQM initiative for antimalarials in Kenya, the PPB, with support from the PQM program, expanded MQM from 5 to 11 sites, including ports of entry. To ensure efforts were made toward sustaining the surveillance activity, PQM trained PPB, NQCL, and NMCP staff on all aspects of MQM and the use of Minilabs. Thereafter, PQM initiated communication with donors and NHP, so as to integrate and institutionalize MQM within the mandate of the MOH. The PQM support fostered a QMS within PPB. Currently, PPB is moving toward ensuring sustainability of PMS activities in the country, and has taken ownership of numerous processes:

1. Created the Medicines Information and Pharmacovigilance Directorate to coordinate all PMS activities, ascribing a budget of $620,000, of which $200,000 will fund PMS activities
2. Introduced the retention of registered products in Kenya, whereby each marketing authorization holder is required to pay $100 per year per product; this money will fund PMS activities
3. Established a QC department, which will house a QC lab to test PMS samples; $100,000 has been budgeted to launch the lab
4. Extended PMS activities to cover other medicines beyond antimalarials
5. Trained personnel who are helping their countries move toward decentralized systems; eventually, a pool of trainers will be established to support the implementation of the MQM activities
6. Employed television, newspapers, public meetings, and social media to educate the Kenyan people about the regulation of medicines

MQM IN PERU

1. Since 2005, DQI-PQM has helped National Malaria Control Programs (NMCP) in Latin America and the Caribbean (LAC) countries to implement the Three-Level Approach (3LA) for antimalarials.
2. DQI and PQM collaborated with the National Center for Quality Control (CNCC), the Peruvian OMCL, to help the lab attain ISO/IEC 17025:2005 accreditation in 2009.
3. In 2012, PQM collaborated with the General Directorate for the Medicines, Commodities, and Drugs (DIGEMID), the Peruvian MRA, to develop a protocol to implement the 3LA to assess medicines in one Regional (decentralized) Health Directorate (DIRESA). Similarly, PQM collaborated with the OMCL to train local health personnel on the use of field tests with the Minilab.

DIGEMID, the DIRESAs, and CNCC now have total ownership of the process:

1. DIGEMID and seven DIRESAs develop annual MQM programs that use the 3LA.
2. CNCC trains personnel at DIRESAs and local universities in the use of the Minilab.
3. CNCC created and leads a network of local university labs to strengthen QC in DIRESAs.

Pictures from MQM Peru

Pictures from MQM Peru

ETHIOPIA OMCL

PQM assisted the Product Quality Assessment Directorate (PQAD), the OMCL at the FMHACA; Ethiopia attained ISO/IEC 17025:2005 accreditation in 2011. Since then, this accreditation has been maintained through two reassessments. Sustainability is fostered through the following:

1. While PQM maintains and repairs PQAD equipment, this activity will transfer to FMHACA in FY16.
2. While FMHACA finances the calibration of lab instruments for the Ethiopian National Metrology Institute (NMI), PQM provides assistance for those that NMI does not cover. Once the latter becomes fully accredited for the remaining instruments, this responsibility will transfer to FMHACA.
3. While FMHACA uses its own budget to procure reagents and other lab supplies for testing premarketing registration and consignment samples, USP/PQM is supporting them for PMS of selected ARV, OI, MCH, and antimalarial medicines.

ANNEX

HIGHLIGHTS OF PORTFOLIO ACCOMPLISHMENTS

CROSS BUREAU

- PQM conducted a joint workshop with the WHO SSFFC Global Surveillance and Monitoring Program, which was attended by 11 African country representatives, to combat poor-quality medical products.
- PQM hosted the annual NOMCoL-Africa members network meeting and disseminated a 3LA to detect SSFFC medicines.
- PQM provided technical input for the Grant Scheme, which increases expertise among African regulatory personnel in activities related to clinical trials, registration of medicinal products, and technologies for human use, at the joint meeting of the New Partnership for Africa's Development, African Medicines Regulatory Harmonization, and the Technical Working Group.
- PQM co-authored three articles that were published in the supplement "The Global Pandemic of Falsified Medicines: Laboratory and Field Innovations and Policy Perspectives," in the *American Journal of Tropical Medicine and Hygiene*. These articles highlighted 17 studies on the global proliferation and peril of ineffective, potentially toxic, substandard, and falsified medicines.
- PQM produced new website content on the quality of medicines, including 18 multimedia articles and 18 links to press releases and resources. In addition, 92 new reports were added to Media Reports on Medicine Quality.
- PQM helped Boston University isolate aptamers for target drugs using the Systematic Evolution of Ligands by Exponential Enrichment system. This partnership identified and tested Eosin Y as a probe for quantitative testing of Amodiaquine in Artesunate/Amodiaquine tablets.

MATERNAL AND CHILD HEALTH

- To reduce maternal mortality resulting from eclampsia and severe preeclampsia, PQM continued to evaluate Galychpharm, a manufacturer of magnesium sulfate injection, which is a low-cost and effective treatment. Next, PQM will prepare for the initial GMP gap assessment; the ultimate goal is WHO PQ.
- PQM performed a GMP assessment of Advanced Chemical Industries Limited (ACI) to produce CHX according to internationally recognized GMP standards. With support from PQM, ACI has implemented more than 90% of the recommendations from the initial visit.
- PQM developed a monograph that allows for the testing of impurities and content (amount of CHX) in a single high performance liquid chromatography (HPLC) procedure to produce CHX topical gel. The monograph is advantageous from both a manufacturing and regulatory perspective, since HPLC is common and will reduce the cost of analysis and the burdens of regulations.
- The PQM Core MCH and TB teams conducted a workshop in Bangladesh on MCH and TB medicines quality case studies and medicines manufacturing considerations. The event drew 45 experts from the regulatory authority, national quality control laboratory, manufacturing sector, and other non-governmental organizations.
- USP published the proposed monograph for CHX topical gel in the *Pharmacopeial Forum* section of its website for public comment. PQM distributed the proposed monograph to the CHX Working Group, regulatory authorities, and manufacturers of the medicine.

NEGLECTED TROPICAL DISEASES

- PQM completed the Biopharmaceutics Classification System (BCS) characterization study for the praziquantel drug substance. The study explored an alternative route of synthesis to improve the drug substance and drug product palatability, and reduce tablet size. The BCS characterization report will be shared with manufacturers for API master file filing with WHO PQ and ERP.
- PQM identified 10 NTD API/FPP manufacturers as potential recipients of PQM TA.

TUBERCULOSIS (TB)

- Since WHO PQ of Zhejiang Hisun capreomycin API and FPP, due to hands-on TA from PQM, the capreomycin FPP price for the public health market dropped from $8.25 USD per unit to the current price of 3.80–4.70 USD per unit. There is an annual savings of 8 million USD on capreomycin.
- PQM also provided TA to Zhejiang Hisun, which enabled them to obtain full WHO PQ for moxifloxacin API. With this development, the moxifloxacin FPP price is expected to drop in the near future for the public health market.
- With PQM's TA, Shanghai Harvest Pharmaceuticals hosted a successful WHO GMP inspection for kanamycin sulfate injectable, which is in global shortage. Currently this product is on track for full WHO PQ and achieved WHO ERP category 1 status for supply to UN procurement agencies and the Global Drug Facility (GDF).
- PQM assisted a Chinese API manufacturer, Fuzhou Fuxin, on its non-sterilized kanamycin API to pass U.S. FDA's inspection in early 2015, with zero observation, and then to obtain full WHO PQ approval in December 2015. It is the first generic kanamycin sulfate API to get approvals.
- PQM assisted in the PQ of two API and FPP products (second manufacturer for capreomycin API, and azithromycin FPP). By supporting multiple API manufacturers, PQM provides options for FPP manufacturers to obtain API at an affordable price, which in turn lowers the FPP price for patients.
- PQM helped manufacturers submit four dossiers for review by WHO (two kanamycin FPPs, levofloxacin FPP, and amikacin FPP dossier).
- With PQM TA, Chinese manufacturer Yabang Pharma obtained a CEP from the European Directorate for the Quality of Medicines for mebendazole API.
- PQM continues to work to make quality-assured clofazimine available to the public health market for purchase through the GDF.

ANGOLA

- PQM resumed activities in 2015 and trained MOH staff, including provincial personnel, on Minilab screening of antimalarial medicines. To support a baseline assessment of antimalarial medicines quality, samples collected will be sent to an accredited quality control lab for testing. The results will serve as a baseline on the quality of medicines in Angola.

BENIN

- PQM conducted a consultation visit with local stakeholders to gather current information on medicines' QA/QC systems, identify gaps, and discuss priority activities with USAID/Benin. PQM developed a work plan based on the assessment and the level of funding.
- PQM trained 10 staff members from the NQCL in sampling and screening of antimalarial medicines. PQM then facilitated the collection of 172 samples from public, private, and informal markets in the Cotonou area. NQCL screened the samples using a Minilab kit. Dissemination of the results is planned for FY16 Q1.
- PQM assessed lab equipment, facilitated repair, and made recommendations for maintenance.

BURKINA FASO

- PQM conducted an assessment of the medicines' QA/QC system and developed a work plan based on the information gathered, consultations with local stakeholders, and the level of funding. Interventions were proposed to strengthen the regulatory and laboratory systems.
- PQM began building the capacity of the National Laboratory of Public Health (LNSP) by training 20 lab staff members in good laboratory practices, good documentation practices, and the proper use of pharmacopeia. PQM also addressed the need for lab equipment to be continually repaired; such maintenance improves LNSP's technical capacity so it can reliably deliver the results that undergird regulatory actions against counterfeit and substandard medicines.

ETHIOPIA

- PQM supported the FMHACA leadership initiative to restructure the agency. As a result, Proclamation #661 (2009) was revised and the agency's efficiency was maximized.
- PQM collaborated with partners to co-host the first Inter-Governmental Authority on Development medicine-regulatory meeting. This coordination harmonized medicine regulatory authorities across eight countries.
- PQM advocated for the inclusion of ARVs, antimalarials, RH, anti-TB

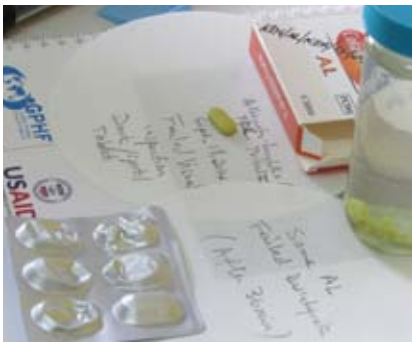
medicines, and vaccines into a fast-track system. As a result, the average time to register new applications for high-priority medicines has been slashed from 25 months to 17.

- PQM coached 49 staff members on basic and advanced GMP training so they can inspect foreign medicines from China and India. This training was crucial in facilitating access to quality medicines in Ethiopia. For the past two years (2013 and 2014), foreign manufacturers' facilities were not inspected; after PQM intervention in 2015, inspections resumed.
- PQM conducted 10 trainings on GMP, PMS sample collection, dossier assessment, ISO 17025, and WHO PQ. Consequently, 209 staff members now know how to improve the inspection system, QC lab, and PMS implementation.
- PQM enabled FMHACA to regulate identified condom defects through testing to safeguard the public from HIV/AIDS transmissions.
- PQM championed the development of a curriculum at the Addis Ababa University School of Pharmacy for regulatory sciences. The goal is to build a knowledgeable workforce that will staff and sustain a first-class national pharmaceutical industry and realize the national strategy, and for pharmaceutical manufacturing development in Ethiopia (2015–2025).
- PQM worked with FMHACA to create a range of science-based tools, such as a strategy for enhanced market authorization, an inspection manual, guidelines for Biowaiver; variation; good distribution practices; good storage practices, and recall guidelines, to improve organization-wide consistency and transparency.
- PQM provided technical support through mock assessments, Corrective and Preventive Action (CAPA) preparation, and follow-up inspections to three manufacturers:
    - East Africa Pharmaceuticals, to produce a zinc sulfate dispersible tablet
    - Cadilla Pharmaceuticals, to produce an ethambutol tablet for TB
    - Addis Pharmaceuticals, to produce and supply CHX gel, which treats neonates and prevents sepsis

GHANA

- PQM helped the FDA Ghana physico-chemical lab take corrective actions after an ANAB audit detected minor shortcomings. As a result, the FDA Ghana lab maintained its accreditation status.

- PQM made it possible for the Ghana FDA physico-chemical laboratory to maintain its ISO 17025 accreditation status through reference standards for calibrating and acquisition of key equipment.
- PQM provided proficiency testing to the Ghana FDA and completed the results of the antimalarials' and uterotonics' post-marketing surveillance.
- PQM prepared for the pilot study launch with Sproxil, which will likely commence in Q1 FY16. PQM helped the lab director select the medicines for the study.
- PQM partnered with the Ghana FDA to complete the first round of MQM for antimalarial samples, issued a report to USAID/Ghana, and tested oxytocin and ergometrine. Based on the MQM results, Ghana FDA seized and destroyed dangerous and unregistered uterotonics from various health facilities.



Kenya

GUINEA

- While the Ebola outbreak stalled PQM activities, PQM was able to provide remote TA by donating and shipping two pieces of lab equipment (gas chromatography and ultraviolet). This material enlarged the MRA's technical capacity.
- PQM conducted a preliminary review of MRA law documents to prepare for a stakeholders' workshop on ways to strengthen the law that established the agency.

Kenya

KENYA

- PQM prepared NQCL to reach ISO 17025 accreditation after it earned approval from the SANAS in seven scopes of lab activities. Kenya NQCL thus became one of the few labs in Africa with both WHO PQ and ISO 17025 accreditation.
- One round of sampling and testing was completed in 11 sites for MQM activities. Five samples of antimalarials were found to be falsified and/or substandard. PPB took regulatory actions on failed samples, and key stakeholders were informed of the findings.
- To reduce the turnaround of the QC testing, PQM provided technical assistance to PPB in establishing a new lab within PPB's premises. PQM helped PPB to review the lab design, and provided layout and partitioning for QC testing in accordance with ISO 17025 requirements.

LIBERIA

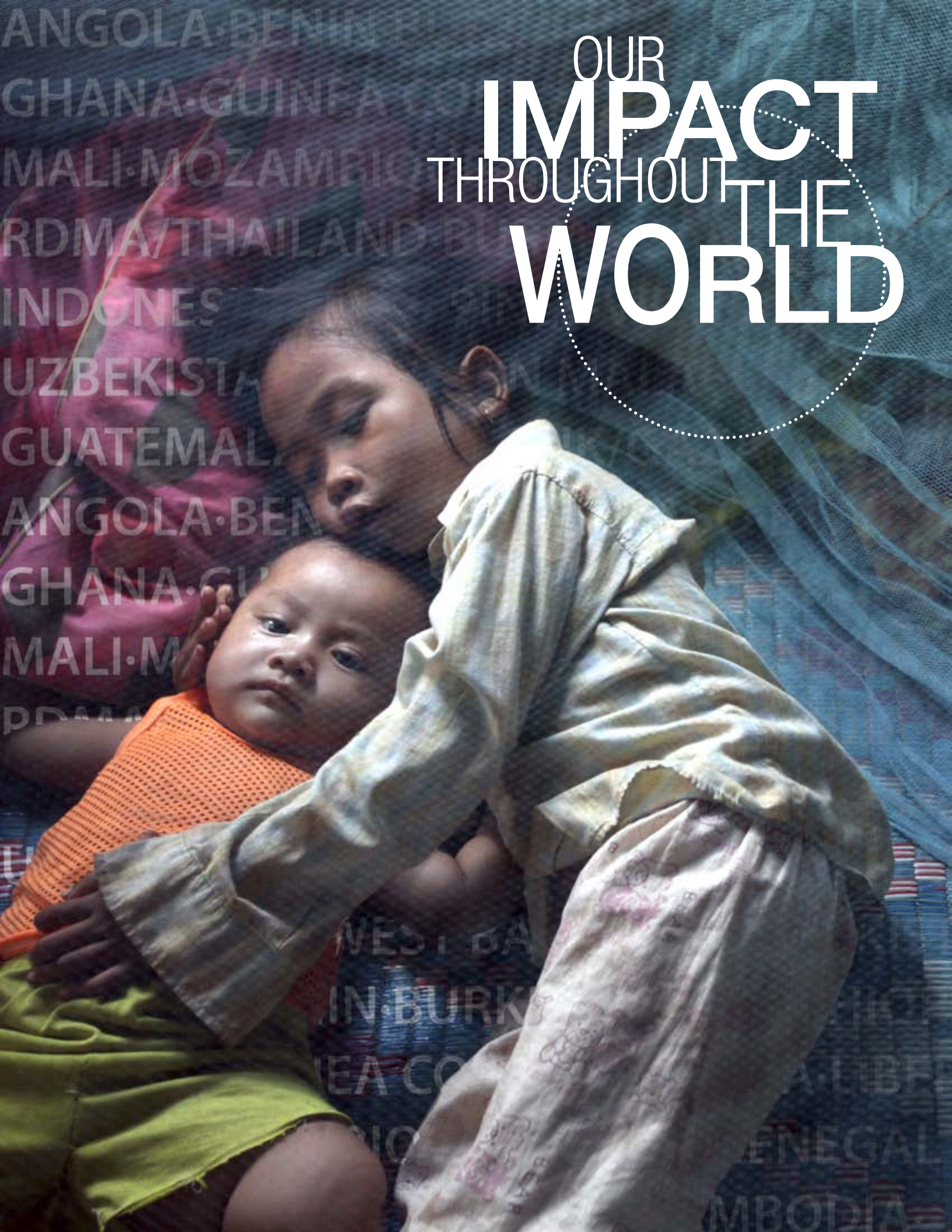
- PQM in Liberia was selected as one of the 10 top cases for the USAID Health Systems Strengthening Global Call. PQM's work in Liberia was also selected out of 145 cases as an Honorable Mention.
- Despite the Ebola outbreak, LMHRA, in collaboration with the Malaria Control Program, continued to conduct the MQM program. PQM held five stakeholders meetings at five sites to promote MQM activities using the newly developed protocol and with support from the in-country consultant and PQM Headquarters, MQM for antimalarials and other medicines helped LMHRA to take regulatory actions (four major ones taken during FY15 Q4). In addition, the LMHRA QC lab scored #1 for the second time among other labs in the NOMCoL Network.
- Building a robust MQM program, along with a strong registration system, has enabled LMHRA to impose continuous and decisive regulatory measures: LMHRA confiscated a truck loaded with pharmaceutical products, imported by the National Drugs Service of Liberia for public hospital and clinics, en route to Guinea. The confiscated products included antimalarial and other essential medicines and triggered personnel changes among senior staff.

Liberia: A consumer alert informs the public of falsified medicines

MALI

- PQM and LNS brought stakeholders together for a workshop about confirmed MQM results. Participants reviewed medicines quality, the strengths and weaknesses of MQM, and methods to perfect it. Opening remarks by the MOH, USAID/Mali, LNS, and PQM were broadcast on national television.
- PQM collaborated with LNS to conduct supervisory visits to the sentinel sites of Kayes and Sikasso. During the visits, sentinel site teams received refresher training on sampling and screening antimalarial medicines using Minilabs. Fifty-five samples were collected and tested during these visits; one sample of fake Coartem from the informal market was found.
- PQM and LNS sampled and tested 400 antimalarial medicines across three sentinel sites and the Bamako district. LNS verified the results obtained in the field, and referred the information on failed samples to DPM

Liberia: Confiscated medicines, including antimalarials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for follow-up. LNS also used WHO's Rapid Alert System to communicate the findings to WHO Mali.

- PQM supported LNS in completing one round of sampling and testing of antimalarial medicines. At six sentinel sites and the district of Bamako, 643 samples were collected and screened. Among the 19 samples that failed, 17 came from the public sector; antimalarial monotherapies came from the informal market. The results were presented to stakeholders at a workshop. The Ministry of Health and Public Hygiene, Regional Directorate of Health, LNS, and National Directorate of Health recommended solutions and identified a plan of action.

MOZAMBIQUE

Mozambique

- PQM facilitated the completion of Laboratório Nacional da Qualidade de Medicamentos (LNCQM) first round of MQM in 10 sentinel sites, which included three newly added port areas. The samples are currently undergoing confirmatory testing at the lab.
- PQM contracted Calibration Consulting Group, an ISO 17025 accredited calibration body, to calibrate key analytical equipment at LNCQM.
- PQM provided the procurement of key lab equipment that will allow the staff at LNCQM to work more efficiently and productively with at least two of every major type of analytical equipment.
- A first-ever, closed-door discussion was organized with key ministry of health directorates, the inspector general, all importers of medicines in Mozambique, USAID/Mozambique, PQM, and the Ministry of Justice. The presentation highlighted the results of national lab testing since the inception of PQM in Mozambique and a categorization of registered and unregistered medicines. As a result of this meeting, the vice minister pledged to publicize and blacklist companies that market counterfeit and substandard medications, and to take forceful action against them.

NIGERIA

Nigeria

Nigeria

- With PQM support, NAFDAC accredited the Central Drug Control Laboratory Yaba with the international ISO 17025 standard. This achievement enables Nigeria to carry out reliable analysis that can be globally trusted and accepted.
- The PQM Nigeria office was officially opened as part of the in-country strategy to support PQM activities in Nigeria with five staff members.
- Forty staff members of the Registration and Regulatory Affairs Directorate were trained in advanced dossier evaluations, and 30 staff members of the Drug Evaluation and Research Directorate were trained in advanced GMP facility inspections.
- PQM provided technical assistance to one manufacturer to support local manufacturing of oral rehydration salts. USAID is in discussions with the manufacturer regarding local procurement.
- With the support of PQM, NAFDAC organized and carried out MQM activities for 800 packs of antimalaria drugs collected throughout the country. Of the 800 samples analyzed, 3.6% failed, while 96.4% were of good quality. This is a considerable improvement upon 2010–2012, when a survey by NAFDAC revealed a failure rate of 19.6%.
- With the help of PQM to NAFDAC, two trainings were organized for 65 staff members of NAFDAC on dossier evaluation and advanced GMP inspection.
- TA provided to Drugfield Pharmaceuticals, a manufacturer of CHX gluconate, boosted the monthly production capacity supplied to the Nigeria market and environment. CHI also benefited from PQM TA, since the company was recently audited by WHO as part of PQM technical support for zinc sulfate and was subsequently considered to be operating at an acceptable level of compliance with WHO GMP guidelines, making zinc sulfate tablets available to the Nigerian market.
- To meet international GMP standards, PQM continues to provide TA to local manufacturers, three of which were slated for a WHO PQ assessment visit in October 2015 for ORS, zinc sulfate, and CHX.

SENEGAL

- PQM introduced a communication and education campaign, which resulted in the establishment of an inter-ministerial committee (IMC) act signed by the MOH. The goal of the IMC is to join with DPM in combating falsified, substandard medicines and the illicit market of which they're part.
- PQM conducted a workshop with all parties of the IMC (more than 32 participants). The workshop led to the establishment of a working IMC group to implement the IMC recommendations.
- Because MQM was deemed sustainable, it has been incorporated into the country's PMS, and LNCM has assumed responsibility for its implementation.

Senegal

RDMA/THAILAND

- PQM helped Burma, Cambodia, Laos, and Thailand to collect antimalarial samples in border areas. Eighty-eight samples were collected from the four countries to be analyzed at the Chulalongkorn University Pharmaceutical Technology Services Center Lab in Thailand. PQM provided pharmaceutical substance reference standards (antimalarial and antibiotics) and documentary reference standards (*USP 38–NF 33, Food Chemicals Codex, USP Dictionary* books) for confirmatory testing, and basic screening tests to Laos, Thailand, and Vietnam.
- PQM presented five modules in two joint WHO SSFFC trainings in Ethiopia and Laos. At a Regional Workshop for 11 African Countries on Global Surveillance and Monitoring of Medicines Quality and Safety held in Ethiopia, PQM collaborated with the WHO Global Surveillance and Monitoring program. PQM also demonstrated the use of counterfeit/falsified detection technologies to the workshop.
- PQM/QMS team joined the Laos Food and Drug Quality Control Center of MOH in revising its Quality Manual and relevant SOPs transforming from product-based ISO/IEC 17025 to method-based accreditation. With PQM's TA, the Vietnam Ho Chi Minh City Institute of Drug Quality Control submitted the Letter of Expression of Interest and supporting documents to WHO PQ, and is awaiting feedback from the PQ team.
- PQM provided historical and recent data on quality of medicines in Thailand to interested partners, including the Global Fund, WHO, and London School

Senegal

of Hygiene and Tropical Medicine doctoral students for their appropriate use to help develop program activities and research.

- The PQM Regional Manager for Asia interviewed the GlaxoSmithKline Communication Team to produce IEC film materials to raise awareness on counterfeit, falsified, and substandard medicines.

BURMA

- PQM helped the Department of Food and Drug (DFDA) produce a paper on the quality of antimalarials in two border areas of Burma (Tamu and Muse). This paper will be presented to the Burmese Annual Research Congress.
- In a national effort to secure areas at high-risk of antimalarial resistance, PQM staff and local partners visited six sentinel sites to collect 150 antimalarial samples and map risky vendors. The samples are awaiting testing.
- PQM sent a team to DFDA's Nay Pyi Taw (NPT) Drug Control Laboratory (DCL) to assess the lab's quality system in preparation for ISO 17025 accreditation. The lab is the sole body for determining the quality of antimalarials and other medicines in Burma.
- PQM partnered with top-level DFDA management to form a QA team, the first of its kind. The QA team was trained on ISO 17025 standards, lab safety, and compliance.
- The DFDA QA team, with support from PQM, began the process of establishing the QMS and document control system in the lab.
- The DFDA collaborated with PQM to assess the status of the laboratory, including infrastructure, equipment, and technical expertise of the lab personnel. Areas for improvement were identified and communicated to the DFDA top management, who resolved to implement the recommendations.
- DFDA, with support from PQM, formulated a timeline for preparatory activities toward ISO 17025 and submitted it to DFDA and PMI. With PQM's TA and international experience, together with a strong desire and commitment of DFDA top management, the DFDA's NPT DCL is undergoing preparations for ISO 17025 accreditation.

CAMBODIA

- The Department of Drug and Food (DDF) completed 14 trainings for pharmacists and drug sellers from 18 provinces, focusing on good pharmacy practices (GPP). In total, 945 participants were trained on GPP from July 2014 to June 2015. DDF also created a GPP certificate for conducted training on SOP writing for the National Health Products Quality Control Center management team. As a result, 10 SOPs—including the Quality Manual— have been completed. An additional 20 SOPs are being drafted.
- In collaboration with the Department of Hospitals, DDF organized a technical meeting in June 2015 to discuss eliminating counterfeit medicines and illegal health services. Ninety-three people from 25 provincial health departments attended.
- DDF-MOH hosted an inter-ministerial committee meeting, which drew 95 participants from DDF, the Department of Hospital, and 25 Provincial Health Departments. DDF-MOH also conducted two workshops to review guidelines about Medicines Donation Receiving and Pharmaceutical Waste Management.
- The Ministry of Health and the Ministry of Interior of Cambodia jointly committed to combat counterfeit and substandard medicines and illegal health services.
- The Cambodia DDF collected 30 samples. Seven samples failed, five of which were prednisolone and two of which were dexamethasone. The Secretariat of the IMC evaluated the seven failed samples, removed the registration number of DexLife 0.5 mg (dexamethasone 0.5 mg) manufactured by Eurolife-India, and retested the remaining six samples.
- To strengthen cross-border collaborations in the Greater Mekong Sub-region, Cambodian and Lao drug inspectors conducted joint drug inspections on antimalarial samples collected in three hospitals/health centers in those countries.

Cambodia

Cambodia

INDONESIA

- PQM helped secure USD $980,000 in grant funding for FY15 from the Global Fund to support the testing of TB medicines at BPOM provincial QC labs.
- PQM substantially contributed to the National TB Program's five-year Strategic Action Plan by integrating budgeted activities on QA of TB medicines and support for local manufacturers into the MOH's strategy.
- PQM recruited two new staff for the Jakarta Office: an operations manager and a senior project coordinator. Additionally, PQM is recruiting a finance officer and a procurement and logistics officer.
- PQM Indonesia supported regulatory BPOM and MOH officer to monitoring on WHO PQ activities in manufacturers, and supported two BPOM officers to attend the week-long seventh annual Dossier Quality Assessment in Copenhagen, Denmark. One officer attended BA/BE consultation in Geneva, Switzerland, and two officers attended BE regional training in Manila, Philippines. PQM also supported one MOH officer, who attended BE regional training in Manila.
- PQM supervised and facilitated the completion and release of 42 SOPs (toward a goal of 55 SOPs) for the PTBB national QC laboratory, and facilitated the completion of the draft PTBB Quality Manual, which was subsequently approved.
- PQM conducted trainings that benefited over 1,300 stakeholders from government QC institutions, MOH, and public and private sector manufacturers. Topics varied extensively, and included:
    - TA for national and provincial labs
    - coordination among national and provincial labs
    - good laboratory practices and basic testing on TB (pyrazinamide tablet and four fixed-dose combination TB medicines) and HIV (nevirapine tablets) medicines
    - pharmaceutical reference substances
    - a reference standard lab in Jakarta
    - gas chromatography and sampling
    - testing of medicines at regional levels
    - ARV care, support, and treatment

Indonesia

Indonesia

PHILIPPINES

- On July 1, the PQM/Philippines field office was officially established. The office now houses a staff of five.
- PQM created a database that tracks the number of TB medicines registered by the Philippines FDA, checks how many of them have been tested using the Minilab and/or by compendial analysis, and verifies whether the medicine collected was falsified or counterfeit.
- Alongside Philippines FDA and the ASEAN, PQM convened a training workshop on BA/BE studies to advance the Pharmaceutical Harmonization Initiative. The workshop drew 40 representatives from Indonesia, Vietnam, Thailand, Malaysia, and the Philippines.
- USP headquarters held a seven-day International Training Program, which made it possible for scientific staff and regulatory executives from the MRA to engage in high-level exchanges. Philippine FDA staff also participated in the 1st Annual NOMCoL Asia Pacific Workshop in May at USP–India in Hyderabad.
- PQM provided TA and resources to local, second-line TB manufacturers so they could achieve internationally accepted standards and requirements for producing quality-assured medicines for the WHO. The PQ Program is progressing to the final stage. The PQM GMP team conducted a mock audit and final GMP assessment at Hizon laboratories for levofloxacin 500 mg tablet. Another company PQM has been supporting is United Laboratories, which is completing CAPA plan implementation for both GMP and dossier on amikacin 500 mg/3 ml ampule.

Vietnam: Group photo of the training workshop

VIETNAM

- With PQM TA, the Institute of Drug Quality Control in Ho Chi Minh City submitted its expression of interest (EOI) and all required documents to the WHO PQ program in Geneva.
- PQM collaborated with Hanoi Center for HIV/AIDs Control Hanoi Provincial AIDS Committee (PAC) to develop specifications for the largest national bid for methadone syrup. PQM provided input on five potential methadone manufacturers and legal narcotic distributors and shared with Hanoi PAC the experience gained from Ho Chi Minh methadone procurement. Hanoi PAC succeeded with its bid, at a value of 9.5 billion VND ($430,000 USD), to procure 13.812 liters of methadone syrup.

Vietnam: Dr. Vin, the director of the Institute of Drug Quality Control – Ho Chi Minh City, delivers his opening remarks.

Vietnam: Mr. S. Berlinguette of USAID Vietnam delivers his remarks.

- PQM provided TA to the Hanoi Provincial AIDS Center to assess the quality section of its tender and human resources capacity to review bid documents.
- PQM collaborated with the Vietnam Pharmaceutical Companies Association to hold the first-ever GMP training in the country. Over 30 local manufacturers and 60 industry leaders in Vietnam attended the workshop.
- In collaboration with the Hanoi-based National Institute for Drug Quality Control, PQM held an ARV testing training workshop using the HPLC method for analysts from eight provincial drug quality control centers and the Institute of Drug Quality Control in Ho Chi Minh City.

KAZAKHSTAN

Kazakhstan

- In partnership with the Regional Economic Cooperation/Chemonics, PQM sponsored a pharmaceutical plenary session of the 4th Central Asia Trade Forum in Almaty. PQM staff arranged a meeting of Kazakhstani manufacturers of second-line anti-TB medicines (Romat Pharmaceutical Company and Nobel Almaty Pharmaceutical Factory) with representatives of Hanmi Fine Chemicals, Korea, which manufactures moxifloxacin API. Hanmi Fine Chemicals is an API supplier approved by the U.S. FDA.
- As a result of the meeting, Nobel purchased the API, manufactured a pilot batch of moxifloxacin FPP, and started stability studies of the finished product. Having a reliable source of the moxifloxacin API will allow Nobel to manufacture high-quality FPP and supply a high-quality anti-TB medicine to the Kazakhstani market. Nobel is also strongly interested in WHO prequalification of its moxifloxacin FPP. Thus, the contract between Nobel Almaty Pharmaceutical Factory and Hanmi Fine Chemicals will potentially increase access to WHO-prequalified second-line anti-TB medicines both in Kazakhstan and abroad.
- PQM hired two GMP consultants, who spent two weeks at the Pavlodar Pharmaceutical Factory. They conducted a GMP assessment of the quality systems and an audit of facilities and documentation, and provided trainings and TA to the staff.
- PQM GMP specialists conducted a two-day GMP baseline assessment of Nobel, and a confidential report was sent to the company.
- PQM translated and edited the WHO PQ documents into Russian.

UZBEKISTAN

- The Uzbekistan Ministry of Health formally requested technical support from PQM in FY15. The approval was received in the FY15 Q4, and the work plan for FY16 was submitted and approved by USAID.

AMAZON MALARIA INITIATIVE (AMI)

- The MRAs in Ecuador and Peru took total ownership of the 3LA developed and implemented by PQM. Both countries established programs (for six months in Ecuador and annually in Peru), which include field-screening tests. The MRA in Ecuador included the screening tests approach (Level 2) in their guidelines for post-marketing assessment of medicines.
- PQM held a workshop to explore sustainable mechanisms for South-South collaboration for medicines' QA in the region. Attendees included representatives from Medicines Regulatory Authority, Official Medicines Control Laboratories and Schools of Pharmacy from MRAs, and OMCLs from 16 AMI and non-AMI countries. As a result, PQM and the countries committed to the development of two key documents:
    - Surveillance forms to collect information on the MRA and OMCL capabilities and needs of countries
    - Concept notes to be presented to the MOHs of the countries
- Twenty-six institutions from 15 countries returned their forms in a display of regional cooperation. The forms confirm the availability in the region of technical and human resources for QA of medicines. A summary of the results and conclusions were included in the concept note.
- PQM developed the concept note from the South-South Collaboration Sustainability Workshop, and delivered it to participating LAC country stakeholders, which submitted it to their respective ministries of health. The concept note addresses OMCL and MRA capabilities and needs and includes recommendations to implement sustainable mechanisms for South-South collaboration. Ministerial support at the country level will be essential to move this initiative forward.
- CNCC and DIGEMID held a milestone workshop in Cuzco, Peru, to further institutionalize the 3LA at a national level and take total ownership of the process. DIGEMID presented the plan for the first annual Medicine Quality

Agencia Nacional de Regulación, Control y Vigilancia Sanitaria

INSTRUCTIVO INTERNO

INSPECCIÓN DE ESTABLECIMIENTOS FARMACÉUTICOS Y TOMA DE MUESTRAS DE MEDICAMENTOS EN GENERAL.

AMI: Cover page of the guidelines in Ecuador that includes the Three-Level Approach

Monitoring program, which will be implemented initially by eight different DIRESAs. During the workshop, representatives from these DIRESAs and from eight universities' labs were trained by CNCC in the use of the Minilab to perform Level 2 testing. Universities' labs, under the lead of CNCC, will participate in a network supporting DIRESAs' implementation of field testing of medicines, formally integrating academia in the country's quality assurance system.

Guatemala

GUATEMALA

- A first-ever collaboration between academia and Guatemala's MOH gave students the practical field knowledge they need to advance their degrees in pharmaceutical science. This collaboration was so successful that the students who helped to implement the 3LA for MQM based their theses on their fieldwork and earned degrees in pharmaceutical chemistry. Indeed, by enabling technically prepared students, this collaboration demonstrates a sustainable mechanism to overcome limitations in human resources for performing MQM in decentralized areas, and sets a precedent for students to fulfill academic requirements for graduation.
- The Medicines Unit from the National Health Laboratory, Guatemala OMCL, earned ISO 17025 accreditation from ANAB in September 2015. Thus, the product-based accreditation conferred to the lab by OGA (the Guatemalan Accreditation Body) has been expanded to a methodology-based one. This new accreditation includes chromatography testing by HPLC and ultraviolet-visible spectrophotometry and dissolution. In LAC, the Guatemalan lab is one of few OMCLs that have ISO 17025 accreditation, and the only one that has it in Central America and the Caribbean; this is the second lab in LAC that attained this standard with PQM support.

Guatemala

WEST BANK/GAZA

- PQM conducted a baseline assessment of four Palestinian manufacturers, organized meetings with key stakeholders, visited the MOH Palestinian Authority and the NQCL, and performed a rapid assessment of Palestine's QA/QC capacities.

- PQM met with four medicines manufacturers to determine their goals for advancing their GMP status. The West Bank companies—Beit Jala Pharmaceutical Company, Birzeit Pharmaceutical Company, Pharmacare, and Jerusalem Pharmaceutical Company—are interested in expanding their sales to a broader international market; to do so, they need to meet international standards. Therefore, PQM visited the manufacturing facilities and collected critical documentation; this material will pave the way for the companies to be assessed according to international GMP standards.
- PQM delivered a detailed work plan to strengthen the QA/QC capacities of the Palestinian Authority and the national QC lab and to facilitate a full assessment of the manufacturers.
- PQM drafted detailed, confidential reports on the baseline assessment for each of manufacturers.

West Bank/Gaza

PAKISTAN

- DRAP requires stability-study data to expedite the registration of CHX for commercial use. So, PQM provided technical feedback on DRAP's stability guidelines, the Stability Study Data Sheet, and Data Requirements for the Stability Study. Consequently, the DRAP Drug Registration Board issued a stability study for use by the pharmaceutical industry, including those producing CHX.
- PQM followed up on the progress of Atco Labs and Friends Pharm CHX formulation development at lab scale. PQM sent each of the companies CHX gels samples acquired from overseas for comparative studies on quality testing and performance. PQM also reached out to additional companies, including Akhai Pharm, which previously produced creams and gel forms for GSK Pakistan. Akhai in Baluchistan expressed interest in and responded to a screening questionnaire, and PQM is in contact with the company for potential TA.
- PQM reviewed the stability-study guidelines drafted by DRAP, as a result of which DRAP issued the guidelines for use by pharmaceutical industry.
- PQM initiated discussion with Lomus about technology transfer to Pakistani Atco, Friends, and Akhai pharmacies. PQM is planning to visit Lomus for a face-to-face meeting in FY16 Q1.

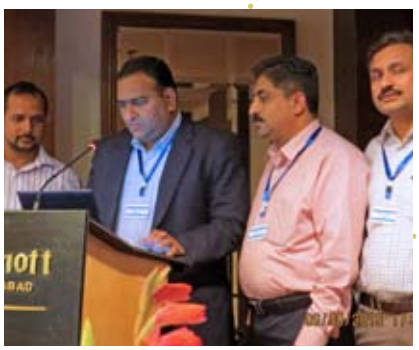
- PQM met with partners, such as UNICEF, WHO, USAID, John Snow, Inc.-USAID-Deliver, and DRAP, about its contribution to the CHX deployment and scale-up in the country by UNICEF, JEPIGO, JSI-USAID-Deliver, and Maternal and Child Health Integrated Program.
- PQM conducted a training workshop on good practices for pharmaceutical quality control (GPPQC) and laboratory management for trainers. The workshop took place September 28–October 2, 2015, and was attended by 18 participants (chief operating officer, directors, senior managers, and analysts) from eight government labs in the country. This was the first training workshop that convened all government QC labs directors and managers from both federal and provincial levels. The training covered eight modules, including principles of GPPQC, a roadmap to ISO/IEC 17025 accreditation and WHO PQ, QC lab management, the cost of quality, and an introduction to inter-laboratory testing/proficiency.
- Orientation on the instructor-led training concept and method were delivered to the labs' directors and managers during the GPPQC.
- A workshop on GMP inspection for trainers targeted to DRAP inspectorates at federal and provincial levels was conducted September 28–October 2, 2015. It was attended by 20 people: three deputy directors, eight federal inspectors, six chief provincial inspectors, one provincial inspector, and two assistant drug controllers. The training covered eight modules, including an overview of GMP, the GMP inspection process, the role of inspectors, types of inspection, common deficiencies, and advanced GMP inspections.
- A series of discussions and communication with the DRAP chief executive officer and other government QC labs were held to encourage them to join the Regulatory Standard Assistance Program, under which labs could receive up to a 75% discount price on USP Reference Standards items directly needed in the country. An agreement was signed with Panjab province Pharmaceutical Drug Testing Lab and Research Center, and USP Reference Standards were shipped to the lab.

Pakistan: Participants learn among QC lab training participants about good practices for pharmaceutical quality control at a training workshop.

Pakistan: Dr. D. Bempong discusses some specifics with a lab director.

Pakistan: Group presentation of a case study

Pakistan: The closing ceremony of the week-long training with featured honorable guests



Pakistan: Group presentation of a case study

Pakistan: Ms. M. Villanueva of USAID Country Mission, and the Honorable Federal Secretary of Ministry of National Health Services, Regulations, and Coordination, Mr. M. A. Shaikh, deliver closing remarks.

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