

Strengthening Pharmaceutical Systems Program Final Report

2007-2012



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About SPS

The Strengthening Pharmaceutical Systems (SPS) Program strives to build capacity within developing countries to effectively manage all aspects of pharmaceutical systems and services. SPS focuses on improving governance in the pharmaceutical sector, strengthening pharmaceutical management systems and financing mechanisms, containing antimicrobial resistance, and enhancing access to and appropriate use of medicines.

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ACRONYMS

ACT	artemisinin-based combination therapy
ADDO	accredited drug dispensing outlet
AMR	antimicrobial resistance
ART	antiretroviral therapy
ARV	antiretroviral
CCM	community case management
DRC	Democratic Republic of the Congo
DTC	Drug and Therapeutics Committee
IMCI	Integrated Management of Childhood Illness (initiative)
IR	intermediate result
LMI	Logistics Management Institute
LMIS	logistics management information system
MDR	multidrug resistant
MOH	ministry of health
MSH	Management Sciences for Health
NGO	nongovernmental organization
NMRC	Namibia Medicine Regulatory Council
PEPFAR	US President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PMIS	pharmaceutical management information system
RPM	Rational Pharmaceutical Management (project)
RPM Plus	Rational Pharmaceutical Management Plus (Program)
SEAM	Strategies for Enhancing Access to Medicines (Program)
SOP	standard operating procedure
SPS	Strengthening Pharmaceutical Systems (Program)
STGs	standard treatment guidelines
TB	tuberculosis
TIPC	Therapeutics Information and Pharmacovigilance Centre (Namibia)
USAID	US Agency for International Development
USD	US dollars
WHO	World Health Organization

INTRODUCTION

The US Agency for International Development (USAID) awarded Management Sciences for Health (MSH) its five-year Strengthening Pharmaceutical Systems (SPS) Program in 2007 as a follow-on to its Rational Pharmaceutical Management (RPM) Plus Program. The mandate of the SPS Program was to build capacity within developing countries to effectively manage pharmaceutical systems, successfully implement USAID priority services, and ultimately save lives and protect the public's health by improving access to and use of medicines of assured quality.

Poverty, lack of economic productivity and opportunity, and social and political upheaval all contribute to inadequate access to life-saving medicines, and the burden falls mainly on susceptible members of society—the poor, women, and children. However, the international aid community has recognized and is addressing the need: new funding sources, such as the US President's Emergency Plan for AIDS Relief (PEPFAR), the President's Malaria Initiative (PMI), and the Global Fund to Fight AIDS, Tuberculosis and Malaria, are making unprecedented sums of money available to procure medicines for deadly diseases.

The two greatest threats to successfully increasing access to medicines are inadequate pharmaceutical supply systems and the worsening human resource crisis. Infrastructure, management systems, information technology, and adequate experienced staff are lacking in the health systems of many resource-limited countries. Regulatory authorities are stretched thin, with counterfeit and substandard products posing an increasing threat.

The SPS Program focused on achieving four key results—

Improving governance in the pharmaceutical sector. Good governance in public health implies the existence of up-to-date and well informed policies, laws, and regulations, and their appropriate enforcement. Governance improves by promoting accountability and transparency and involving civil society in the governance process.

Strengthening pharmaceutical and laboratory management systems to support public health services/interventions. Strengthening systems requires a long-term commitment and strategies that are flexible enough to adapt to changes, whether related to politics, finances, or personnel. For most countries, strengthening requires building a foundation for interventions that will yield sustainable improvements, such as curricula reform, while at the same time implementing activities that address more immediate problems, such as the need to train and retain existing staff.

Containing the emergence and spread of antimicrobial resistance. The emergence of extremely drug-resistant tuberculosis (TB) and resistance to new antimalarial medicines highlight the urgency of stepping up the rollout of critical interventions to address resistance—from the individual patient, community, and hospital levels to advocating for antimicrobial resistance (AMR) containment strategies at the national and international levels.

Expanding access to essential medicines. Expanding access to medicines requires that barriers to geographic accessibility, product availability, product affordability, cultural acceptability, and appropriate use be addressed as part of an effective and efficient pharmaceutical management system.

SPS work focused on the USAID strategic objectives related to maternal health, child survival, HIV/AIDS, AMR, malaria, and TB. In addition to these global programs, SPS provided technical assistance to the following country programs—

- Afghanistan
- Armenia
- Angola
- Azerbaijan
- Bangladesh
- Benin
- Brazil
- Burundi
- China
- Democratic Republic of the Congo (DRC)
- Dominican Republic
- Ethiopia
- Georgia
- Ghana
- Guatemala
- India
- Kenya
- Lesotho
- Liberia
- Madagascar
- Mali
- Mozambique
- Philippines
- Namibia
- Rwanda
- Senegal
- South Africa
- South Sudan
- Swaziland
- Tanzania
- Uganda
- Ukraine
- Uzbekistan
- Vietnam

Additional countries were also affected by involvement with regional programs that included USAID/East Africa, South American Infectious Disease Initiative, and West Africa Regional Portfolio, among others.

Partners

The SPS core team included the Ecumenical Pharmaceutical Network, based in Nairobi, which works on behalf of the mission/faith-based health care sector that delivers pharmaceutical services in developing countries. BroadReach Healthcare, based in Washington, DC, and Cape Town, South Africa, is dedicated to expanding access to high quality health care services. The Lewin Group is a health care financing and human services consulting firm with high-level experience supporting both state and federal agencies. With over 50 years of experience, Logistics Management Institute has played a substantial role in developing and implementing many of the supply and logistics capabilities that support US Government operations. The University of Washington’s Department of Global Health specializes in research and analysis of issues related to pharmacoepidemiology, pharmaceutical care services, pharmacovigilance, pharmacoconomics, product quality control and assurance, and pharmaceutical outcomes research and policy as they relate to global health. The World Health Organization (WHO)

Collaborating Center in Pharmaceutical Policy works with WHO and other international partners to provide basic and advanced training in pharmaceutical policy analysis, pharmaceutical systems development, and intervention research; and develops, tests, and disseminates innovative approaches to medicine-related policy and behavior change.

In addition to the core team, SPS had a pool of select organizations to use as specialized resources. They included—

- African Medical and Research Foundation
- American Society of Health-Systems Pharmacists
- EuroHealth Group
- Infectious Diseases Institute
- Joint Commission International
- London School of Hygiene and Tropical Medicine

SPS also worked with international partners such as the World Bank on a number of global initiatives, including PEPFAR, the Global Fund, and the Global Drug Facility.

Sharing Results

During the life of the program, SPS Program staff members and partners presented program results at numerous international forums including—

- American Public Health Association
- American Society of Tropical Medicine & Hygiene
- Global Health Council
- Global Symposium on Health Systems Research
- HIV Implementers
- International AIDS Society
- International Conference on Improving Use of Medicines
- International Pharmaceutical Federation
- mHealth Summit

Select articles in peer-reviewed journals and text book chapters that were completed under SPS include the following.

Edmund Rutta, Katie Senauer, Keith Johnson, Grace Adeya, Romuald Mbwas, Jafary Liana, Suleiman Kimatta, Margareth Sigonda, and Emmanuel Alphonse. Creating a new class of pharmaceutical services provider for underserved areas: the Tanzania accredited drug dispensing outlet experience. *Progress in Community Health Partnerships: Research, Education, and Action* 2009; 3(2), 145-53.

Andy Stergachis, Rebecca J. K. Bartlein, Alexander Dodoo, Jude Nwokike, S. Patrick Kachur. A situational analysis of pharmacovigilance plans in the Global Fund Malaria and US President's Malaria Initiative proposals. *Malaria Journal* 2010, 9:148.

Martha Embrey, Jane Briggs, and Grace Adeya. “Saving the Lives of Children by Improving Access to Essential Medicines in the Community.” In: *The Routledge Handbook on Global Public Health*, Richard Parker and Marni Sommer (editors).

William A. Wells, Niranjan Konduri, Cynthia Chen, David Lee, Heather R. Ignatius, Elizabeth Gardiner, and Nina R. Schwalbe. Tuberculosis regimen change in high burden countries. *The International Journal of Tuberculosis and Lung Disease* 14 (12): 1538-1547, December 2010.

William A. Wells, Niranjan Konduri, Cynthia Chen, David Lee, Heather R. Ignatius, Elizabeth Gardiner, and Nina R. Schwalbe. Implications of the current TB treatment landscape for future regimen change. *The International Journal of Tuberculosis and Lung Disease*.

Nyasha Bakare, Ivor Ralph Edwards, Andy Stergachis, Shanthi Pal, Charles B. Holmes, Marie Lindquist, Chris Duncombe, Alex Dodoo, Joel Novendstern, Jude Nwokike, Ricardo Kuchenbecker, Judith A. Aberg, Veronica Miller, and Jur Strobos. Global pharmacovigilance for antiretroviral drugs: overcoming contrasting priorities. *PLoS Medicine* 2011 July; 8(7): e1001054.

Veronica Miller, Jude Nwokike, and Andy Stergachis. Pharmacovigilance and global HIV/AIDS. *Current Opinion in HIV and AIDS* 2012, 7:299–304.

Flores W, Chang J, Barillas E. Rapid assessment of the performance of malaria control strategies implemented by countries in the Amazon sub region using adequacy criteria: case study. *Malaria Journal* 2011, 10:379.

Gabriel Daniel, Hailu Tegegnetwork, Tsion Demissie, Richard Reithinger. Pilot assessment of supply chains for pharmaceuticals and medical commodities for malaria, tuberculosis and HIV infection in Ethiopia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 2012 Jan;106(1):60-2. Epub 2011 Nov 17.

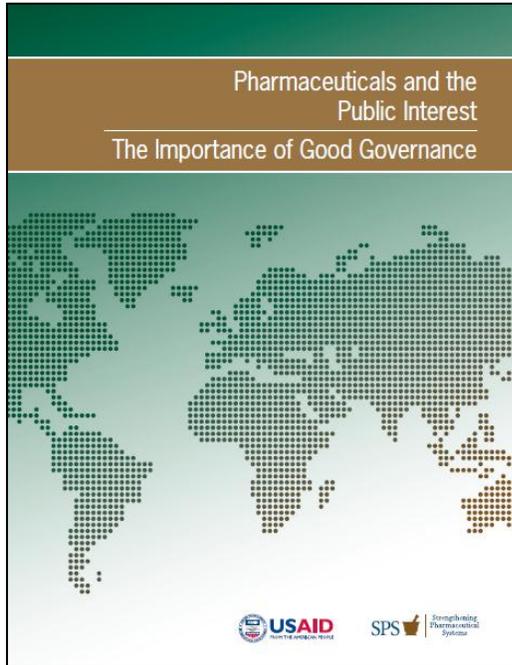
Sagwa E, Mantel-Teeuwisse A, Ruswa N, Musasa JP, Pal S, Dhliwayo P, van Wyk B. The burden of adverse events during treatment of drug-resistant tuberculosis in Namibia. *Southern Medical Review* 2012 5;1: 6-13.

Extensive program information and publications can be accessed from the program website: www.msh.org/sps.

The following report broadly summarizes how the SPS Program achieved its intermediate results covering the period from June 2007 through December 2012. The appendix includes brief reports on activities organized by the global, regional, and country programs that provided funding.

ACHIEVEMENT OF INTERMEDIATE RESULTS

IR 1—Improve Governance in the Pharmaceutical Sector



SPS’s approach to improving governance, transparency, and accountability in the pharmaceutical supply system focused on establishing transparent management systems and processes grounded in policies based on best practices, legislation supported by the rule of law, and regulation supported by appropriate technology and capacity. SPS built the capacity of organizations and their staff members to better lead, manage, and provide appropriate oversight of different pharmaceutical management activities. We also provided technical input to international initiatives, such as the WHO’s Good Governance for Medicines program, as well as national programs that address governance within the pharmaceutical sector and across other sectors.

SPS’s paper *Pharmaceuticals and the Public Interest: the Importance of Good Governance* provides USAID health program managers, country counterparts

(including policy makers and health care managers and workers), and other stakeholders with an understanding of how governance issues permeate pharmaceutical management and influence the effectiveness of health programs.

Medicines Policies and Regulations

More than 30 years ago, WHO, with support from partners including MSH, Boston University, and Harvard University, embarked on an initiative to help countries develop and implement essential medicines policies. Most member states currently have policies in place; however, significant changes in public health have forced countries to reassess priorities and revise and update policies and regulations.

Over the life of the SPS program, we assisted in the development or update of medicines policies, standard treatment guidelines (STGs), essential medicine lists, or regulatory frameworks in 17 countries. We helped national drug regulatory authorities in 15 countries to improve their registration procedures which they then applied to increase the number of registered products and reduce the backlog of application dossiers waiting review.

Supporting the Ministry of Health to Improve Governance in Kenya's Public Pharmaceutical Procurement System

In 2005, a Kenya Anti-Corruption Authority review of pharmaceutical procurement and logistics revealed major inefficiencies and governance gaps, including weak oversight bodies and non-transparent procurement practices. In response, the Government of Kenya in partnership with development partners began implementing initiatives to make public procurement more transparent, reduce leakage and wastage, and increase accountability through the Public Financial Management Strategy.

In April 2007, the Governments of Kenya and the United States signed an agreement under the Millennium Challenge Account Threshold Program (MCA-TP) that supported governance initiatives. The agreement focused on reducing public sector corruption by overhauling the public procurement system, with a specific focus on health care. Recognizing weaknesses in the procurement system, USAID asked SPS to provide technical assistance to strengthen Kenya Medical Supplies Agency (KEMSA) systems using MCA-TP funding. In 2008, SPS and partners from the Logistics Management Institute and the Ecumenical Pharmaceutical Network conducted a comprehensive assessment of KEMSA to validate planned MCA-TP interventions, identify areas of weakness, and make recommendations for closing gaps.

SPS technical assistance focused on—

- Strengthening KEMSA's procurement capacity and accountability
- Improving supply chain management of medicines and supplies
- Building Ministry of Health capacity to monitor and assess KEMSA's procurement functions
- Strengthening the tracking of medical supplies and improving availability and use in rural health facilities

To address critical weaknesses in governance, SPS provided technical support for the following activities—

- Establishment of the Supply Chain Oversight Committee (SCOC) through the development of a charter. Committee members are appointed by and report to the Permanent Secretary in the Ministry of Health; names of new members are published in the gazette to promote transparency. The SCOC Charter describes the committee's lines of authority, scope, mandate, and membership. Its role is one of proactive oversight and results-oriented performance monitoring.
- Development of audit tools and training and mentoring of SCOC's supply chain auditors through an audit of KEMSA's procurement and distribution processes. In addition, SPS supported the preparation of training materials for capacitating future auditors.
- Training on corporate governance to KEMSA's Board of Directors and senior management.
- Development and update of standard operating procedures for most of KEMSA's core functions (procurement, warehousing, distribution, and service liaison) in line with best practices and international standards.
- Posting of procurement tender prices on KEMSA's updated website to promote transparency. In August 2009, a survey comparing KEMSA's procurement prices with major manufacturers, suppliers, other public procurement bodies and the *International Drug Price Indicator Guide* found that KEMSA offered value for money.

Next steps include institutionalizing the SCOC in the Department of Pharmacy structure and providing for it in a budget line.

Our specific activities in the area of policies, regulations, and increasing transparent processes include the following—

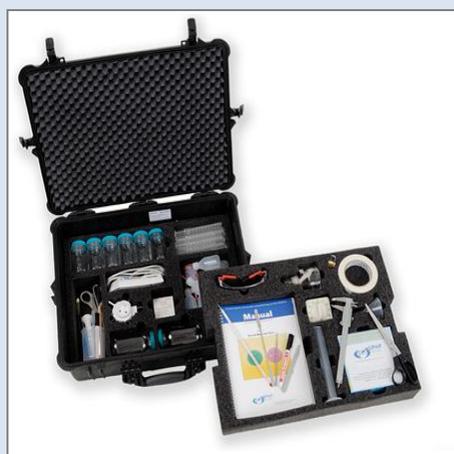
- In 2008, SPS assessed the Namibia Medicine Regulatory Council's (NMRC) regulatory capacity and drafted recommendations. Resulting activities included helping the NMRC develop a strategic framework, vision, mission statement, and goals for a five-year strategic plan; helping draft guidelines for the ethical promotion of health products, and developing guiding principles to regulate complementary and alternative medicines. Other activities were drafting terms of reference for the NMRC and its committees that define membership, roles, and responsibilities; establish committee functions; and develop conflict of interest forms for members, committees, and the secretariat to help enforce transparency. NMRC adopted the terms of reference and conflict of interest guidance in 2010. In addition, NMRC will publish members' curriculum vitae, conflict of interest declarations, and voting records.
- In Swaziland, SPS provided technical assistance in revitalizing the medicines and pharmacy legislation to be consistent with a comprehensive national pharmaceutical policy. To ensure transparency, a series of consultative workshops enabled stakeholders from governmental, nongovernmental, and private sector organizations to participate in the process. The process has received high-level support and extensive media coverage; the draft bills are with the Ministry of Health (MOH).
- We provided technical assistance to the Namibia Medicines Regulatory Council to streamline the drug registration process. A new website developed with SPS assistance increases transparency of medicine regulatory activities. Streamlined registration reduced the average time to register a medicine from 13 to 4 months, a 30% increase in the number of registered antiretrovirals (ARVs), and more than a 70% increase in the number of multisource generic ARVs.
- SPS in Kenya was an active member of about 30 MOH committees and was instrumental in the establishment of key MOH policy-making, program management, and governance bodies. For instance, commodity security committees were established for all priority health programs with SPS/Kenya providing technical leadership and support. In addition, SPS helped the MOH develop the Health Facility Level Citizen's Service Delivery Charter, which describes the facility's pharmacy department responsibilities and clients' rights and responsibilities, and seeks feedback on pharmacy service delivery. To support charter implementation, SPS drafted a simple handbook for pharmacy staff that converts the charter's commitments into service delivery expectations for clients.
- We worked with Benin's essential medicines and consumables procurement institution to create a legal framework and provide them with training in governance and management.
- SPS helped develop the architecture and governance framework of the Coordinated Procurement and Distribution System improving availability of ARVs in Rwanda.

Quality Assurance

Poor quality and counterfeit products can have a profoundly negative impact on public health and perception. Many developing countries, however, do not have the financial and personnel resources, regulatory frameworks, or organizational infrastructure necessary to assure the quality of their pharmaceutical products. SPS helped countries explore more cost-efficient and effective models for quality assurance testing to protect the public from poor quality and counterfeit pharmaceuticals. In addition, SPS provided technical assistance to strengthen management at quality control laboratories and enhance their effectiveness and participation in pharmaceutical quality assurance processes, such as monitoring of supplier performance and postmarketing surveillance.

SPS Worked with South Sudan to Strengthen Quality Assurance

No medicine quality survey has been carried out in South Sudan; however, a number of studies in sub-Saharan Africa have shown that substandard and counterfeit medicines are a problem in most countries. With weak enforcement and porous borders, South Sudan is particularly vulnerable. The Ministry of Health of the Government of Southern Sudan is responding to these challenges by putting in place a quality assurance system that includes drug registration, inspections, licensing pharmaceutical outlets, postmarketing surveillance, and quality control testing. In March 2010, the MOH in collaboration with the SPS Program set up a quality control and inspection office at the Kaya port of entry. The office's purpose is to ensure that pharmaceutical products imported into South Sudan are of good quality.



For the office to be successful and promote collaboration, the MOH and SPS hosted workshops to orient stakeholders in Kaya on the program. The workshops covered the importance of medicine quality assurance and how stakeholders can work with the MOH office to improve medicine quality.

Port-of-entry orientation

MOH also offered an orientation and training session for port-of-entry officials, including customs agents, police, and government representatives from the border areas of Uganda. The workshop explained the quality assurance framework including drug registration, licensing and registration of premises and personnel, import verification, port-of-entry inspection, quality control testing, and plans for pharmacovigilance and postmarketing surveillance.

In addition, participants learned the procedures to follow to clear medicines for import and reviewed different quality control tests that can be carried out with the Global Pharma Health Fund Minilab.⁶ The Kaya inspection/quality control office uses a Minilab to test samples at the port of entry. Participants also discussed strategies for improving collaboration with the office.

After the workshop, enforcement has increased on importers bringing medicines into Southern Sudan who are required to present relevant documents before clearance at Oraba, Uganda, and at Kaya on the South Sudan side. As a result, some importers have opted to avoid Kaya and are now passing through the DRC before entering South Sudan at the Bazi port of entry.

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MOH quality control training

The MOH quality control technician in Kaya is responsible for reviewing documents for any consignment of medicines and physically inspecting the items. If necessary, the technician may test samples using the Minilab[®] before the Customs Department clears the consignment.

MOH and SPS trained the technician in standard operating procedures and produced job aids for housekeeping, filing, communication, document review, physical/visual inspection, sampling, disintegration test, color reaction, and the thin-layer chromatography assays.

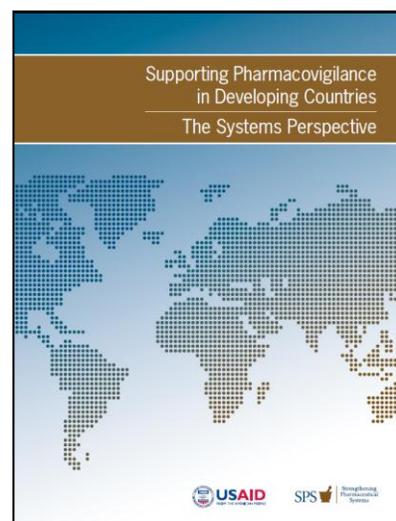
Between March and July, 2010, the MOH office at Kaya tested 35 products/batches, with the following results.

Quality control test	Number of failures (N = 35)	% Failure
Visual inspection	5	14.3
Disintegration	7	20.0
Color reaction	6	17.1
Thin-layer chromatography	7	20.0

Pharmacovigilance

Few developing countries have the structures, systems, or resources in place to support medicine safety (pharmacovigilance) activities; those that do often operate them on a limited scale. SPS’s approach was to help countries develop realistic and sustainable approaches to patient safety through comprehensive pharmacovigilance systems. We worked with countries to develop reporting and monitoring strategies that encompass the full spectrum of medicines safety—product quality, adverse drug reactions, and medication errors—using a range of surveillance methods.

SPS also advocated for strong pharmacovigilance programs through the publication of a concept paper describing our comprehensive approach, [Supporting Pharmacovigilance in Developing Countries: The Systems Perspective](#). In addition, SPS hosted the “[National Pharmacovigilance Systems: Ensuring the Safe Use of Medicines](#)” conference in 2010 where over 100 representatives from MOHs, WHO, the Global Fund, USAID, and the US Centers for Disease Control and Prevention met to discuss a systems-oriented approach to medicines safety. SPS developed an [indicator-based pharmacovigilance assessment tool](#) for systematic and longitudinal monitoring of country capacity and performance in ensuring the safety and effectiveness of health products registered in the country. SPS, with support from USAID and the US Food and Drug Administration, used the tool to conduct an assessment of pharmacovigilance systems in 46 sub-Saharan African countries and published the report, [Safety of Medicines in sub-Saharan Africa: Assessment of Pharmacovigilance Systems and their Performance](#).



One of SPS’s first pharmacovigilance activities occurred in Namibia with the establishment of the Therapeutics Information and Pharmacovigilance Centre (TIPC) in 2008, which launched an adverse drug reaction surveillance and reporting system for ARVs. The TIPC provides broad-

based medicines-safety services, such as how to avoid potential drug interactions, and communicates point-of-care therapeutic information to health care providers and the public through a hotline, fax, and e-mail. SPS has helped the TIPC build capacity in medicine safety and pharmacovigilance in the public and private health care sectors; overall, since the TIPC's opening, more than 100 public and private health care workers have been trained in medicine safety. The Centre's surveillance indicated that zidovudine-associated anemia was the most frequent adverse effect reported in ARVs (64% of reactions); this was used to change first-line ART guidelines. The Centre also expanded its mandate to include all essential medicines, not just ARVs.

Outcomes from SPS Assistance to Countries Building Capacity in Pharmacovigilance

Democratic Republic of the Congo. Developed a training module combining rational medicine use and pharmacovigilance and sponsored 134 health care workers to participate in training.

Ethiopia. Developed and implemented training materials on pharmacovigilance; trained more than 100 trainers.

Ghana. Created a handbook on adverse drug reaction monitoring of artemisinin-based combination therapies in collaboration with the National Malaria Control Program; conducted a comprehensive assessment of the national pharmacovigilance system.

India. Developed a protocol and operational plan for conducting active surveillance for the ARV program of Karnataka State.

Kenya. Set up seven sentinel sites to monitor adverse drug reactions from ARVs; trained more than 350 health care workers; published newsletters; translated data into regulatory actions.

Nigeria. Developed adverse drug reaction training materials, reporting forms, and a manual detailing a standard approach for the national tuberculosis program.

Rwanda. Established the National Pharmacovigilance and Medicine Information Center and its strategic plan; developed reporting forms, guidelines, training materials, and protocol for cohort event monitoring; trained more than 2,000 health care workers.

South Africa. Initiated ARV adverse drug reaction sentinel surveillance at 14 sites and cohort event monitoring at 7 sites in KwaZulu-Natal province; developed protocols, a manual, data management system; trained health care workers; enrolled 952 patients in ongoing cohort event monitoring as of mid-2011; assessed pharmacovigilance in the pharmaceutical industry.

Vietnam. Conducted a comprehensive assessment of the pharmacovigilance system; initiated sentinel site-based active surveillance of ARVs.



Pharmacovigilance training in Vietnam

Decision making and strategic planning

Strategic planning is negatively affected by the lack of good data and lack of knowledge about using data to make good decisions. SPS worked with pharmaceutical sector partners to assess their existing pharmaceutical management information systems (PMISs), analyze gaps, and develop a system that meets stakeholder needs, including harmonizing and coordinating donor activities and reporting. The information system can incorporate different functional components such as tendering and procurement planning, inventory management, medicine consumption and patient data. Our view of a PMIS also integrates data collection, processing, and presentation of information that helps staff at all levels of a country's health system make evidence-based decisions.

SPS worked with 29 countries to conduct indicator-based assessments to inform strategic planning and improve PMIS to generate needed data. SPS also strived to create sustainable, country-owned information systems; for example, in 2010, SPS officially transferred the management of ART-related national data to Namibia's Ministry of Health and Social Services, greatly advancing country ownership.

The Supply Chain Information Portal strengthens the supply chain by making web-based tools available to the Bangladesh DGFP and registered public users. The portal received two prestigious awards at Bangladesh's Digital Innovation Fair in 2011—**best e-governance initiative** and the runner-up award for **national digital innovation** in the e-health category.

SPS helped the Government of Bangladesh plan, implement, monitor, and provide training to Directorate General of Family Planning staff on a web-based information system designed to ensure availability of contraceptives at government and nongovernmental organization (NGO) clinics. The system provides information on nationwide stock status of contraceptives and raises an alert if there is a possibility of stock shortage. It helps determine the amount of contraceptives needed and helps the government make evidence-based procurement decisions.

In Kenya, SPS worked with district health management teams to create software to facilitate facilities' report on medicine consumption for major public health programs via SMS. The software enables synchronization and aggregation of data at central and district levels and notifies facilities of delay or absence. Six months after the intervention, reporting rates of the 176 user facilities using the SMS had reached 100% for ARV and laboratory commodity reporting, enabling more accurate and reliable quantification and resupply of medicines to these pilot facilities.

Procurement Practices

SPS supported country-level implementation of good procurement practices by promoting the greater dissemination, adoption, and implementation of proven tools and approaches, such as MSH's *International Pharmaceutical Price Indicator Guide*. SPS responded to 38 requests from USAID Missions and NGOs to provide support in supplier selection and procurement of medicines; for example, SPS and its partner, Logistics Management Institute, worked with the Kenya Medical Supplies Agency to build system-wide governance strengthening approaches such as department-specific standard operating procedures (SOPs), key performance indicators, and a website that publicly posts procurement information. As a result of the implementation of supplier performance monitoring and back-order management, SPS helped eliminate stock-outs of ARVs and TB medicines in key facilities in South Africa. In Brazil, SPS assisted in the development of supplier monitoring and evaluation systems in support of prequalification.

Pharmaceutical Service Standards and Accreditation

Accreditation is one way to assure service quality and to ensure that different standards in a country are brought into line by defining, applying, and enforcing recognized minimum standards for care. Some countries, such as South Africa, which already have accreditation programs for certain programs and services, have benefited from SPS's support to develop standards for ART services and provide training. In addition, SPS developed the National Core Standards for Health Establishments to measure quality of care and an extended pharmacy audit for in-depth assessment of pharmaceutical services. SPS worked closely with its partner, Joint Commission International, which develops the accreditation systems for health facilities in the United States and other countries, to develop and test two tools in Kenya and Ethiopia to assess their readiness to implement a pharmaceutical services accreditation program and assess pharmacies based on standards.

Accrediting Pharmaceutical Services in South Africa

To support South Africa's Department of Health, SPS assessed over 1,100 public pharmaceutical facilities in nine provinces to provide strategies to meet new government accreditation requirements related to pharmaceutical services. We trained more than 300 facility staff members in how to use the accreditation audit data collection tools. In addition, participants at a national forum evaluated progress toward reaching compliance with the new legislation. After the interventions, a national report on accreditation showed considerable improvements including a 41% increase in the number of registered pharmacist assistants and dozens of pharmacies receiving structural upgrades.

IR 2—Strengthen Pharmaceutical Management Systems to Support Public Health Services

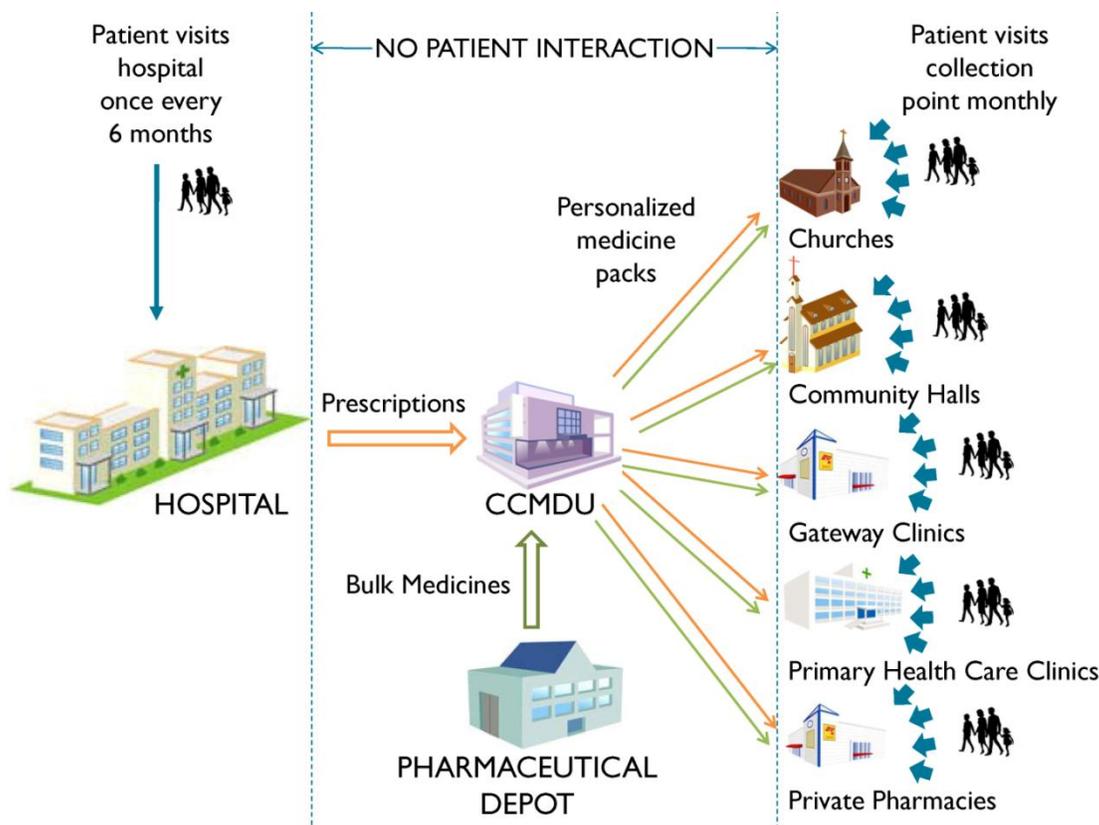
Strengthening systems requires a long-term commitment and strategies that are flexible enough to adapt to the changes that inevitably occur, whether political, financial, or personnel-related. For most countries, strengthening requires building a foundation for interventions that will yield sustainable improvements, such as curricula reform, while at the same time implementing activities that address more immediate problems, such as the need for in-service training of existing staff on new guidelines.

A publication that summarizes SPS’s health system strengthening activities is [*Pharmaceutical Management Interventions that Improve Country Health Systems: The Strengthening Pharmaceutical Systems Program*](#).

Health Facility Level Interventions to Strengthen Pharmaceutical Management

One of SPS’s most important strategies was to focus on improving pharmaceutical management functions at the health facility level to support the expansion of PEPFAR, PMI, and other USAID programs. SPS supported service delivery interventions by determining the “readiness” of a facility to manage ARVs, new antimalarials, other essential medicines, and point-of-care diagnostic services; helping local counterparts track availability of medicines and avoid stock-outs; and monitoring prescribing and dispensing practices. This top-down, bottom-up approach was a key to the success of the SPS Program.

Because of a shortage of pharmacists, pharmacy assistants and nursing staff must fill the gap in lower-level clinics in South Africa. SPS worked with the government and stakeholders to down-refer patients who are stabilized on ART from hospitals to primary health-care clinics, while maintaining a centralized dispensing unit at the hospital. In addition to reducing the patient load for the hospital’s pharmaceutical service, this strategy also reduces transportation costs for patients and brings services closer to home. Hospital pharmacy staff prepare prescriptions which are delivered to a clinic closest to the patient. As part of its computerized tool, RxSolution, SPS developed a down-referral module to facilitate the prescription transfer. At the clinic, pharmacist’s assistants or nurses dispense the ARVs and review patients’ treatment progress. The clinic returns progress reports and uncollected medication to the hospital. The system worked so well for ART patients in the first six months that it was expanded to include over 1,000 patients needing long-term treatment for mental illnesses and other chronic conditions.



Supporting treatment down-referral in South Africa through a Central Chronic Medicines Dispensing Unit

Prescriptions for stable patients from two hospitals are sent to the central unit where they are packaged for individual patients and sent to 1 of 143 community collection points chosen by the patient. Patients receiving medicine at private pharmacies and community halls waited on average less than 30 minutes, while patients at hospitals waited more than 4 hours. Over 3 years, the unit increased the number of prescriptions by 80% to reach approximately 86,000 patients per quarter. SPS helped develop policies and procedures for the down-referral system and a computerized dispensing system at the dispensing unit.

Kenya developed a decentralization model that uses the concept of a satellite ART site linked to a central ART site with the infrastructure and human resource capacity to provide mentoring. SPS developed a “decentralization tool kit” to help facilities take over new roles and responsibilities in pharmaceutical management. Rollout of the ART tool kit began in November 2007. As of January 2008, SPS had trained 60 staff members on the decentralization concept; logistics management tools and job aids had been disseminated nationally; 11 national SOPs finalized; supportive supervision materials pre-tested in seven districts, and mentorship materials printed. Fifty central sites now support over 150 satellite sites, while national reporting rates have improved to exceed 90%. SPS developed a medication use counseling checklist for ART which serves as a job aid for dispensers to use when counseling their patients. The checklist helps the dispenser ensure that the patient and his or her representative adequately understand the proper use of the medicine, its storage, and the possible side effects. The national ART program adopted the checklist and rolled it out to all ART sites.

Dissemination of System Strengthening Tools

During the RPM Plus Program, MSH developed a number of electronic and manual pharmaceutical management tools that can be adapted for different country contexts. The SPS Program significantly advanced the spread of these tools and, in some cases, enhanced their functionality.

Examples of SPS electronic tools being used in multiple countries include the electronic dispensing tool (EDT) for dispensing medicines and tracking patient care, RxSolution for inventory management and dispensing, e-TB Manager for TB medicine and case management, PharmaDex for drug registration, and Quantimed for calculating pharmaceutical needs. SPS helped assure that the information technology tools introduced had the potential to reduce workload, support supply chain management functions, increase the efficiency and quality of pharmaceutical services, were compatible with local technology and capacity, and could be supported locally. For example, we supported country programs by identifying and training local “super” users to conduct routine maintenance and troubleshoot issues.

“...the SPS project has substantially strengthened the pharmaceutical patient data management, which is key to ensuring a continual supply of medicines and monitoring patients’ adherence to drug regimens and essential to maintaining the quality of antiretroviral treatment and improving HIV outcomes.”

—USAID/Namibia SPS Evaluation

When feasible, we harmonized software tools and pursued a cross-cutting system strengthening strategy by incorporating different disease-specific frameworks (i.e., HIV/AIDS, malaria, TB, maternal and child health) into each software tool. For instance, the electronic dispensing tool started as an ART-specific solution, but we broadened its functionality to support many diseases and have adapted it to include country-specific essential medicine lists. In addition, PharmaDex, RxSolution, and e-TB Manager were all been upgraded and expanded to include new features to interface more easily with other software systems and web-based tools, and to serve users in multiple languages.

SPS worked with 29 countries to improve their PMIS to generate needed data. Specific examples include the following—

- SPS developed and applied the Situation Assessment Tool and its framework to measure health system strengthening in PMI-supported countries.
- SPS collaborated with the WHO and other pharmaceutical management partners in the development of the publication *Harmonized Monitoring and Evaluation Indicators for Procurement and Supply Management Systems*.
- In Ethiopia, the Continuous Results Monitoring System is used to track availability and use and monitor performance, and results are regularly shared among stakeholders.
- SPS implemented the End Use Verification tool in nine countries, using it to monitor the availability of commodities and providing information on how malaria is being diagnosed and treated; we also used the EpiSurveyor GPS function to map health facilities while

conducting End Use Verification surveys, allowing ministries of health and PMI to track supervisory visits

- We used the electronic dispensing tool to issue automatic SMS reminders to patients to come to facilities to pick up refills before their date of refill, and after the date of missed refill to remind them to come in for a refill
- SPS developed a clinical algorithm for the use of adherence measurement tools in resource-limited settings
- In Ethiopia, SPS helped create reliable pharmaceutical information systems by developing SOPs and data management forms. Over 400 hospitals and health centers now use standard forms for patient registration, tracking, and inventory control, and over 140 hospitals use SPS's electronic dispensing tool to keep pharmacy dispensing and inventory records.

How eTB Manager has Improved TB Data Management in Brazil

In Brazil, SPS worked with the Hélio Fraga National TB Reference Center and the National TB Program to develop a web-based multidrug resistant (MDR) MDR-TB surveillance system (e-TB Manager), coupled with a new management information system to track treatment of MDR-TB patients and manage second-line medicines. Results included increased notification rates and HIV testing rates; improved diagnostic capacity and clinical practices for MDR-TB; and better data recording, information management, and sharing at all levels (e.g., recording of follow-up forms increased over six-fold over three years).

Users of the new system found that enhanced information management mobilized teams to deliver services more efficiently. As one user noted, "I give valuable data to the upper level, and I receive valuable information at my level." Users also feel the management information system is a motivator because treatment centers and state programs can now compare their results on advances in diagnostic, clinical, and pharmaceutical management. Consequently, Brazil has adopted e-TB Manager as its national TB surveillance management information system for MDR-TB.

Quality and Quantity of Human Resources Capable of Performing Pharmaceutical Management Services

Our approach to building human resource capacity focused on addressing short-, medium-, and long-term solutions, including traditional face-to-face training, but also on alternative approaches such as increasing the role of the private sector, facilitating task-shifting, and using MSH's monitoring-training-planning approach to skills building and problem solving. Short-term interventions yielded quick results to existing challenges, such as providing job aids and SOPs to facilitate task-shifting. Long-term solutions required national-level planning and strategies. The SPS team helped governments collaborate with professional organizations, regulatory bodies, training institutions, and employers to develop long-term workforce plans and address identified gaps. For example, SPS worked with the Ethiopian Pharmaceutical Association to provide continuing education programs for pharmacists to improve counseling and referrals. We implemented a similar program in Kenya.

In addition, we used “embedding” as a way to build capacity in counterparts. For instance in South Sudan, USAID asked us to build the capacity of the national staff members to develop, coordinate, and evaluate policies and interventions for malaria and for the pharmaceutical sector; SPS placed two full-time technical advisors within the MOH to mentor their South Sudanese counterparts. Dr. Samson Baba, the MOH’s Director General for External Relations and Coordination said that the MOH considered SPS less a partner organization than as a “*part and parcel member*” of the MOH. SPS “*gives advice at the right time and sounds caution when needed.*”



To address the long-term issues related to the lack of institutions available to train pharmaceutical staff, SPS helped Namibia expand the institutional capacity of the National Health Training Centre. SPS provided technical and financial support to the center to renovate classrooms and offices and provide tutors and consultants. Activities include revising the pharmacists’ assistant training curriculum and developing standards and qualifications for the pharmacists’ assistant course, paving the way for national accreditation. Through these efforts, the National Health Training Centre increased its capacity for training pharmacists’ assistants by 300% from the previous 8 per year to the current 24 per year. The graduating pharmacists’ assistants quickly engaged in government efforts to decentralize ART services to remote parts of Namibia. Severe shortages of critical health care personnel, including pharmaceutical staff, called for a systematic approach to establish and strengthen the capacity of local training institutions to produce competent health care personnel in response to national needs.

The National Health Training Center has indeed become a cornerstone institution to train health care providers throughout Namibia. It plays a vital role, particularly in the battle against HIV/AIDS and Tuberculosis. I am pleased that the United States Government has been able to support this Center and continue to contribute to its development.

—US Ambassador to Namibia, Dennise Mathieu

Accomplishments across many countries included working with—

- 15 training institutions worldwide to implement and adopt quality in-service training in various aspects of pharmaceutical management
- 16 countries to implement revised health educational materials that include concepts of AMR and rational medicine use
- Local counterparts and professional associations in 15 countries to develop training and licensing program for new cadres of health workers
- 51 countries to develop SOPs and job aids to support good inventory management practices

While country-specific accomplishments included—

- A package of SPS capacity-building interventions that dramatically increased DPT-3 (diphtheria, pertussis, tetanus–3 doses) coverage in South Sudan by 65% in one year (43–71%), exceeding the national target of 70%. The package included: (1) prioritizing immunization activities using the “reaching every country” algorithm, (2) adapting WHO’s Vaccine Week Initiative for South Sudan’s needs, (3) developing monitoring and supervision guidelines for immunization, (4) tracking WHO’s Expanded Program on Immunization performance progress, and (5) supporting population-based Expanded Program on Immunization planning
- Developing in-service training curricula for pharmaceutical management topics in Kenya, such as commodity management, pharmacovigilance, supportive supervision, and quantification, which the government adopted for use on a national level
- Supporting the adoption of new guidelines for TB control and developing MDR-TB guidelines and training materials in Brazil. Our nationwide capacity-building programs for MDR-TB case management, diagnostic capacity, and monitoring contributed to a 12% increase in the drug-resistant TB cure rate from 2004–2010.
- Conducting a national pharmaceutical sector human resource survey in Afghanistan that determined that the ratios of pharmacists and pharmacy assistants per population were 1:21,000 and 1:28,000, respectively, and the ratio of pharmaceutical personnel to establishments was less than 1:6. As a result, in most pharmaceutical establishments, non-pharmaceutical cadres provided services. The government used the results to develop a five-year strategic framework to strengthen pharmaceutical human resources.
- Building the capacity of nurses who provide HIV/AIDS-related pharmaceutical services in rural Namibia through a 10-month in-service pharmacotherapy program. Results showed significant improvements in knowledge and skills (Figures 1 and 2).

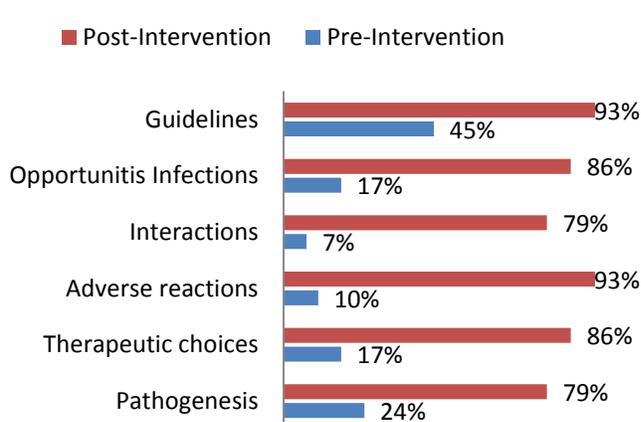


Figure 1: Knowledge improvement on pharmaceutical services for HIV/AIDS

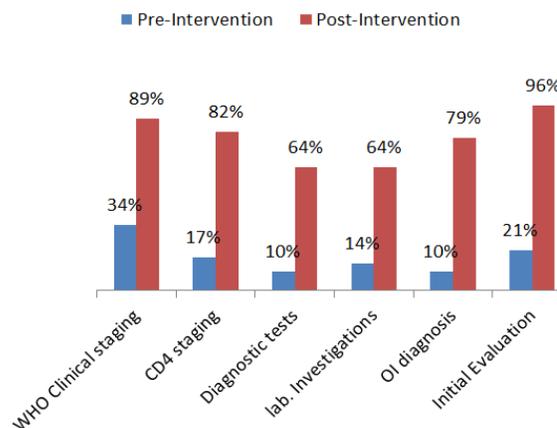


Figure 2: Improvement in diagnostic skills in HIV/AIDS cases

Capacity of Local Institutions and Networks to Provide Pharmaceutical Management Assistance and Training

RPM Plus began initiating a long-term strategy to address the limited capacity of local institutions with expertise in pharmaceutical management and the dearth of people with skills to provide technical assistance. SPS worked with its partner organizations to build on and expand this south-to-south strategy by revising existing RPM Plus training courses to include training-of-trainer components, so they could be more easily disseminated; for example, the Ecumenical Pharmaceutical Network was strengthened in pharmaceutical management by the transfer of tools and training of trainer approaches, enabling them to offer local technical assistance to the faith-based community. We provided training of trainers to 73 institutions worldwide to provide training on pharmaceutical management topics.

Strengthening professional societies to provide continuous education in Kenya's private and community health sector

In Kenya, constraints to providing ART in private sector and community-based settings include lack of appropriate training materials, poor dissemination of national guidelines, inability to ensure compliance, and weak linkages between public and private sector practitioners. SPS worked with the Pharmaceutical Society of Kenya, the pharmacists' professional body, to introduce a continuous professional development program to promote appropriate use of ARVs for private sector providers.

Using needs assessments, a multidisciplinary team developed one-day curricula for different cadres. The program rollout started with training regional PSK officials as trainers; subsequently, organizers designed one-day seminars on priority ART topics held on weekends that were facilitated by opinion leaders. Between January–November 2008, 11 sets of training materials on ART-related topics were developed. Seven regions held 39 seminars for over 2,500 practitioners from private hospitals, clinics, and pharmacies; pharmaceutical distributors; and public facilities. Participants included pharmacists, pharmaceutical technologists, doctors, nurses, clinical officers, and people living with HIV and AIDS.

Professional organizations invited participants to the trainings, which proved a good way to disseminate national ART treatment guidelines, job aids, and lessons learned. Participants received continuing education points and certificates of attendance. Implementing continuing professional development programs through Pharmaceutical Society of Kenya and other professional organizations provides a powerful conduit to share ideas for improving ART. Trainees liked the participation of opinion leaders, a short weekend program, and the opportunity for sharing experiences and professional development.

Management of Laboratory Commodities, Supplies, and Equipment

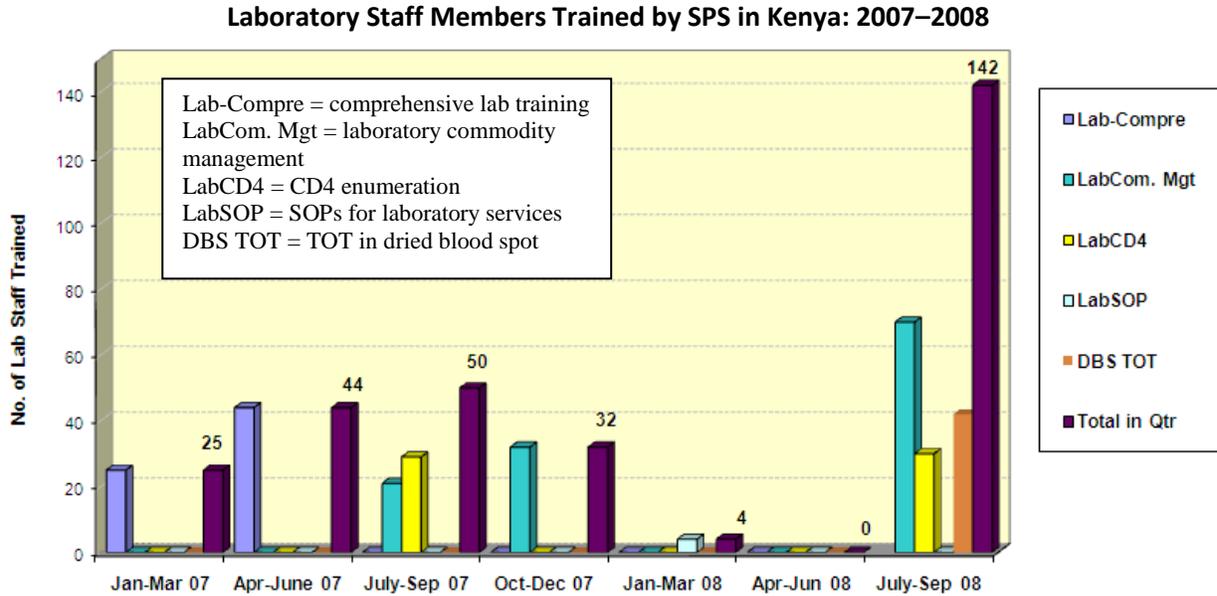
Medical laboratory services are a critical, yet often neglected, component of essential health systems in resource-poor countries. Fundamental weaknesses in the overall management structure of laboratory services, together with financial constraints, lack of human resources, and poor infrastructure prevent efficient operation and delivery of accessible, quality-assured laboratory services to support national public health programs. SPS complemented efforts to build laboratory capacity in resource-poor countries by improving management and leadership practices; in addition, SPS worked to increase the availability of essential laboratory and diagnostics equipment and other related supplies by improving the management of laboratory commodities. We also worked with more sophisticated laboratory systems to increase their

capacity; for example, SPS provided technical support to the formulation of national policy on laboratories in Brazil, including implementation of the laboratory quality system according to the ISO 17025 and ISO 15189 norms. Several labs started implementing the new policy, and their accreditations were confirmed by an independent audit.

In Lesotho, frequent unanticipated stock-outs of essential HIV/AIDS and TB laboratory supplies were common in laboratories due to lack of a comprehensive laboratory supplies management system. Laboratory personnel had inadequate tools and skills to monitor stock or quantify commodities needed to sustain ART services. As a result, the central level did not have reliable information to guide laboratory commodities supply chain decision making. SPS helped develop a laboratory logistics management information system (LMIS), inventory management tools, and training curriculum. Fifty-seven laboratory workers from all of the country's 25 hospital laboratories, National Health Training College, and central medical stores were trained on the LMIS; 34 through a training-of-trainers program, and 23 through a workshop facilitated by newly trained personnel. Because initial implementation was slow, we introduced supportive supervision and mentoring in February 2012 and purchased Internet data cards for laboratories to improve LMIS reporting.

As a result of SPS technical assistance, Lesotho now has 34 national LMIS trainers. Four of these have already trained 23 additional laboratory personnel. Sixteen of 25 facilities received three rounds of supportive supervision and mentoring visits, and 21 laboratories now have Internet access. Between June and August 2012, reporting rates, timeliness of reporting, and completeness of reports improved from 20% to 68%, 0% to 41%, and 0% to 29%, respectively. The MOH now has access to information on commodity availability from the LMIS that was previously unavailable. This data was used to quantify and forecast HIV rapid test kit needs in November 2012. Since laboratory services began using the LMIS to inform procurement and distribution decisions, the country has not experienced any stock-outs of HIV rapid test kits.

In Kenya, SPS was an integral partner in building the country's national-level laboratory capacity by serving as a member of Kenya's newly established Laboratory Interagency Coordinating Committee, which advises the government on laboratory services improvement. SPS served as Secretariat and participated on several of the Committee's subcommittees. In collaboration with Committee partners, we supported the development, launch, and dissemination of the following components of the national laboratory program: national laboratory policy guidelines; a national strategic laboratory plan for 2005–2010; various national standards, including those for blood transfusion; a training manual for laboratory diagnostics for malaria; ART SOPs; and refresher curricula for laboratory and clinical staff. In addition, with the National Public Health Laboratory Service, SPS developed national laboratory reporting tools, including laboratory investigation report forms for 11 tests and for commodity management, field-tested the tools in 40 facilities, and revised them for national rollout. Over 2007–2008, SPS trained almost 300 laboratory staff members in various areas, including SOPs and commodity management.



IR 3—Contain the Emergence and Spread of Antimicrobial Resistance

The emergence of extremely drug-resistant TB and resistance to artemisinin-based combination therapies (ACTs) highlight the urgency of stepping up the rollout of critical interventions to address resistance. For several years, MSH, through RPM Plus and SPS, joined the international public health community in advocating for more action on problems associated with antimicrobial resistance, and supporting key interventions through regional and country-level implementation.

Drug and Therapeutics Committees

USAID, through SPS, has been a leader in establishing Drugs and Therapeutics Committees (DTCs), which is a primary intervention in WHO’s *Global Strategy for Containment of Antimicrobial Resistance*. By strengthening DTCs, facilities and MOHs create a reliable way to identify and address medicine use issues across all public health programs. For more than 15 years, MSH has provided technical assistance to DTCs in developing countries through direct training and training-of-trainer initiatives and through follow-up support. To complement our well-known DTC course, we developed a training-of-trainers program that teaches adult learning methodologies and practical skills to conduct a DTC training course. This course increases the capacity of health care professionals to become facilitators for future courses in their own countries. A common problem with training courses is that participants go back to their places of work and have difficulty maintaining their new skills without ongoing support. We addressed that issue through an innovative follow-up program designed to help participants carry out their DTC workplans and become DTC advocates. Course participants became active partners in DTC implementation by receiving specific technical assistance and working with other in-country stakeholders including the MOH, SPS offices, and hospitals to support DTCs and improve medicine use. Participants’ partnerships with in-country collaborators promoted advocacy for DTCs and facilitates networking among trainees to enhance follow-up performances.

Since 2001, 945 health professionals from 70 countries have been trained in 24 courses. The SPS process for promoting and supporting DTCs through training and follow-up of course participants paid measurable dividends in many countries. The few following examples show the wide range of accomplishments by course participants and other in-country stakeholders—

- The reduction in use of 3 injection products, which saved 4,091 US dollars (USD) over 6 months and the deletion of 20 pediatric cough and cold medicines from the formulary (Kenya).
- A decrease in the use of anti-rabies vaccine from #1 in use to #5 in use in an ABC analysis after training was provided on the vaccine’s appropriate use (Namibia).
- An analysis of the cost of pneumonia treatment, which resulted in the development of new STGs and a medical records review process to assess physician adherence to the guidelines (Paraguay).
- In four months, a hospital outpatient clinic’s reduction in the average number of medicines per prescription from 3.4 to 2.4, reduction of prescriptions with injections from 20% to 10%, and a decrease in prescriptions with antibiotics from 40% to 37% (Kenya).
- A reduction in hospital antibiotic use from 8.5 to 4.5 days after the DTC targeted medical staff for training and supervision (Namibia).
- The creation of an adverse drug reaction unit within the hospital and a regular publication on adverse drug reactions (Eritrea).
- An ABC drug analysis that resulted in changes in the hospital formulary and in the suppliers of several drugs (India).
- Establishment of a system that monitors prescribing patterns for certain high-use antibiotics (Malaysia).
- Institution of DTCs at 101 hospitals and at primary health clinics to establish formulary management systems and conduct medicine use studies at the lower level of health care (Ethiopia).
- An assessment showing overuse of ACE inhibitors, which resulted in significant cost savings due to more patients receiving the recommended therapy of hydrochlorthiazide (Namibia).



SPS Process for Providing DTC Training Follow-up

St. Joseph’s Hospital is a 350-bed private nonprofit hospital in Kitgum, Uganda. The hospital DTC identified numerous drug-use problems including substandard storage and distribution and poor prescribing practices. Although treatment guidelines existed, prescribers at the hospital did not use them consistently. The DTC was provided training and support to build their capacity to address irrational medicine use issues. DTC activities included adopting the Uganda clinical

guidelines for pneumonia management in children under five and promoting the guidelines and training medical staff in their use. In addition, the committee developed tools to study the use of medicines in pneumonia case management. Before the intervention, the DTC conducted a baseline survey to measure hospital physicians' and pharmacists' awareness and use of the clinical guidelines. The survey revealed negative attitudes toward using the guidelines, and a review of 100 randomly selected charts showed that only 29% of cases had been prescribed the recommended medicines. After the intervention, an audit of 100 charts showed that 63% of medical staff followed the treatment guidelines—an increase of 117%. The DTC's early success encouraged the committee to promote other treatment guidelines among the hospital's medical staff and expand their efforts to include surgical antibiotic prophylaxis.

Tool for DTCs to Monitor Antimicrobial Use in Hospitals

SPS developed [How to Investigate Antimicrobial Use in Hospitals: Selected Indicators](#), which can help DTCs, physicians, pharmacists, managers, and researchers monitor and assess antimicrobial use in their facilities. The manual defines a limited number of indicators to objectively measure antimicrobial management and use and provides tools and step-by-step instructions to design and carry out an assessment in hospitals.

The manual was field-tested in Ghana and Uganda and was used in Afghanistan to identify specific antimicrobial use problems. Assessment results identified the overuse of third-generation cephalosporins in some hospitals, lack of guidelines and irrational use of antimicrobials for surgical prophylaxis, lack of treatment guidelines for pneumonia and other infectious diseases in hospitalized patients, and inadequate drug information resources.



Data collector and patient from the Afghanistan Medicine Use Study, March 2009

Infection Control

Nosocomial infections are a major threat to patient safety worldwide, and hospital-acquired infections often require second- and third-line treatments that come with serious adverse effects. Although numerous guidelines exist, changing the culture to promote infection control remains a challenge in hospitals. RPM Plus and Harvard University developed a self-assessment and rapid quality improvement approach to improve hospital infection control practices in resource-constrained settings. Field-tested in the Philippines and Uganda, SPS introduced the tool and approach to hospitals in South Africa and Swaziland in 2007. In South Africa, the national and provincial departments of health institutionalized infection control programs with national adoption of the infection control assessment tool and training of more than 200 trainers in all provinces. The institutionalization process resulted in the development of infection control-related systems, policies, and tools and regional infection control refresher trainings.

Zambia's national AMR advocacy working group collaborated with University of Zambia School of Medicine stakeholders to analyze gaps in their undergraduate medical curriculum and generate recommendations on how to incorporate AMR and rational medicine use topics. The School of Medicine adopted all the suggested changes and included them in the revised curriculum.

Curriculum Reform: Some Lessons Learned in Zambia

- Advocate for preservice curriculum reform as a sustainable, low-cost intervention results in an early and lasting influence on students' competencies for practice. Enlist the support of local opinion leaders during the initial advocacy-building process.
- Engage and work with all the key stakeholders in a step-wise manner to secure their continued commitment and help them make informed and collaborative decisions throughout the process of curriculum reform.
- Gather and disseminate examples of tools and templates that local stakeholders can customize and use during key steps such as curriculum mapping, competency analysis, and curriculum development.
- Use the opportunity provided by cross-cutting and practical topics such as AMR, rational medicine use, and pharmacovigilance to promote application of basic science for public health and clinical disciplines.
- Remember that curriculum reform is often a multiyear commitment, which affects action and funding plans; however, focus on key areas and avoid overambitious recommendations
- Do not view the work as finished when the curriculum has been reformed. Continue engaging and working with the related stakeholders, at least during an initial round of implementing the new curriculum.

Source: Joshi 2010. <https://apha.confex.com/apha/138am/webprogram/Paper225010.html>

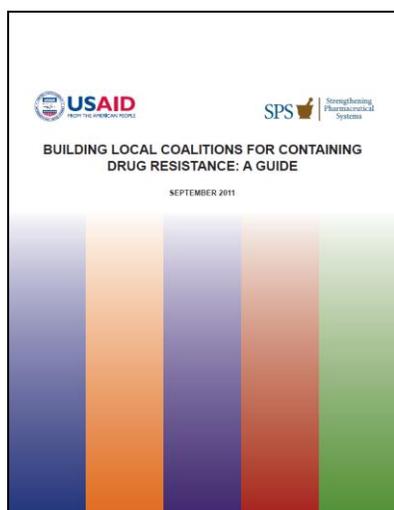
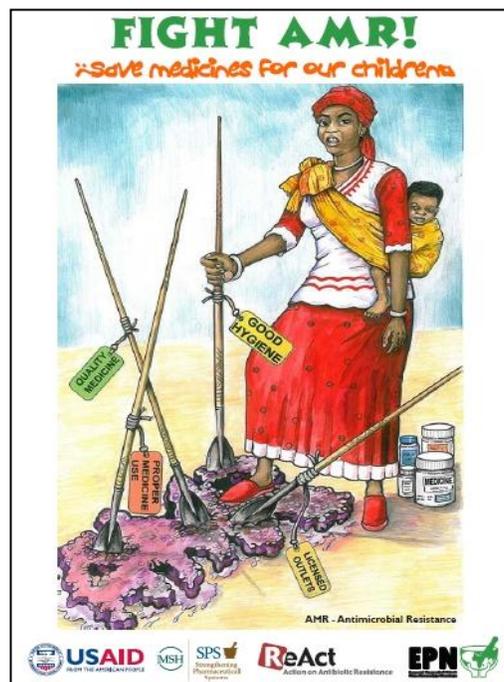
Community Medicine Use

Community case management (CCM) is an international strategy to deliver treatment for common childhood conditions, such as pneumonia, diarrhea, and malaria. CCM relies on trained, supervised community members to provide antibiotics, oral rehydration therapy, antimalarials, zinc, and other select treatments. For CCM to succeed, providers should have the medicines and supplies they need, manage them appropriately, and use them rationally. Through key collaboration with CCM partners, SPS worked to assure that CCM programs incorporate critical pharmaceutical management components into training and implementation. For example, SPS set up a pilot project with partners in Senegal to train and supervise community health workers to treat cases of childhood pneumonia with antibiotics. Evaluation showed that nearly 90% of workers correctly evaluated, classified, and treated acute respiratory illnesses, plus there were no co-trimoxazole stock-outs. In addition, nearly twice as many pneumonia cases were treated in intervention areas than in control districts. As a result, the Senegalese MOH integrated the practice into policy and extended the community-based pneumonia treatment project nationwide.

In addition, SPS staff members authored a chapter on managing medicines for the *Community Case Management Essentials Guide* coordinated by the CORE Group and a chapter on CCM and medicines in *The Routledge Handbook of Global Public Health*, published in 2010.

Global and Country Level AMR Advocacy

SPS supported AMR advocacy and calls-to-action in Africa through two regional organizations, the Ecumenical Pharmaceutical Network and the Regional Pharmaceutical Forum, serving the East, Central, and Southern African Health Community. SPS and its partners conducted four regional AMR and infection control meetings for 93 participants from more than 20 countries. The participants returned home and generated impressive results; for example, in less than a year, participants at one meeting had initiated more than 40 AMR-related activities in their facilities. Other notable events included Ecumenical Pharmaceutical Network's *Fight AMR Campaign* around the 2009 Global Health Assembly in Geneva and the Regional Pharmaceutical Forum's explicit addition of AMR components into its five-year regional pharmaceutical strategy. The Regional Pharmaceutical Forum and Ecumenical Pharmaceutical Network initiatives show that existing regional organizations can be mobilized to expand the scope and impact of AMR initiatives and that such initiatives bring stakeholders from multiple countries to a single common platform to generate a shared vision, build widespread coalitions, and mount organized actions to contain AMR.



In addition, SPS formulated and helped implement a country-level AMR advocacy and containment strategy in Zambia and Ethiopia. The approach consisted of a rapid assessment to identify important issues and players and the formation of local multidisciplinary AMR working groups to advance advocacy and implementation of AMR containment interventions. This approach stimulates and guides stakeholders with mutual vested interests to identify priorities and take concerted action to address AMR. We revised and updated our guidance handbook to support local coalition-building for AMR.

At the facility level, SPS worked with accredited drug dispensing outlets (ADDOs) in Tanzania's Kilosa district to raise awareness of the importance of using medicines correctly among private sector dispensers and consumers. ADDOs are an important source of medicines for many people in Tanzania, especially those who live in rural areas that may be kilometers away from a public clinic. SPS collaborated with the Tanzania Food and Drugs Authority to improve ADDO dispensers' skills and capacity to educate and counsel their customers while dispensing antimicrobials. SPS conducted a baseline survey to collect information on dispenser knowledge and practices related to antimicrobial use and AMR in general. Based on the survey results, SPS developed, pretested, and finalized AMR messages and related communications materials,

including job aids for dispensers, customer information posters for shops, and rubber stamps for medicine labels. SPS has oriented 84 prescribers, 124 ADDO dispensers, and 8 representatives from the district health team on the AMR initiative in Kilosa. An integral part of the AMR activity is ongoing supervision and monitoring for the dispensers to assure their knowledge of the issues and understanding of the project's importance.

IR 4—Expanded Access to Essential Medicines

Essential medicines are safe, efficacious, cost-effective products that meet established quality specifications. To expand access to essential medicines, barriers to geographic accessibility, product availability, financial affordability, and cultural acceptability must be addressed.

Private Sector Access

The private sector, which includes NGOs, can play a crucial role in advancing public health goals, but ministries of health often have limited collaborative experience with that sector. SPS helped governments understand the implications of working with the private sector and helped them develop innovative approaches to incorporating the private sector to increase access to medicines, including contracting out certain activities, developing training programs for private-sector health care providers, and using community-based health care providers to reach more people. We worked with nine countries to conduct country-level options analyses to determine viability of public-private partnerships to increase access to essential medicines.

In Ethiopia, SPS advocated for a legislative change to allow the private sector to provide ART services. SPS then helped build capacity in the private sector to deliver ART, including training 25 private hospital pharmacists in ART and ARV management; providing over 40 private hospital and community pharmacies with SOPs for ARVs management; training 20 private pharmacy professionals to manage three fixed-dose combination drugs; and collaborating with the Ethiopian Pharmaceutical Association to train more than 800 private sector pharmacists in ART and ARV management, good community pharmacy practice, and pharmacy ethics. Activities have now expanded to include malaria treatment.

SPS did similar work in Kenya by collaborating with the Pharmaceutical Society of Kenya to connect with private sector ART providers. SPS conducted 46 weekend seminars on ART topics that reached nearly 3,000 private practitioners countrywide. Collaboration with the Pharmaceutical Society and other professional organizations improved linkages and participant turn-out from the private sector and provided practitioners an opportunity to share experiences from different settings and inform their strategies for improving the use of ARVs and other medicines. SPS is officially accredited by Kenya's Pharmacy and Poisons Board as a continuing professional development provider for the material.

Many people in developing countries seek health care and medicines from the private sector. SPS worked with Tanzania government authorities to improve the skills of ADDO dispensers in managing malaria, acute respiratory infection, and diarrhea through a one-week Integrated Management of Childhood Illness (IMCI) training module; 3,362 dispensers from 1,438 ADDOs in 8 regions in Tanzania were trained. IMCI was also introduced in DRC's private sector through

a training and supervision program in two pilot health zones. Pre/post evaluation results indicated that 31% (14,932) of ADDO encounters in 4 districts were children under five years. ADDO dispensers diagnosed 37% with malaria, 27% with acute respiratory infection, and 14% with diarrhea, dispensed appropriate medicines, and referred severe cases. In DRC, trained and supervised private sector pharmacy staff significantly improved their knowledge of the correct treatment for acute respiratory infection (27%–61%), diarrhea (4%–75%), and malaria (22%–72%). Similarly, the percentage of correctly referred cases improved from 3% to 19%, and cases for all three diseases that received counseling increased from 26% to 64%. An increase in correct treatment was significant only for malaria (3%–53%).

Uptake of New Health Technologies

Past experience with the introduction of new technologies, including medicines and diagnostics, has shown that there is often a significant delay between the availability of new treatments and their eventual adoption and implementation at country level. The SPS Program promoted the active coordination of all facets of introducing new products, starting at the very beginning of the process. For example, we contributed to the development of general frameworks and guidelines for introducing and implementing ACTs for malaria, fixed-dose combinations and new diagnostics for tuberculosis, and zinc for acute diarrhea. At country level, SPS helped ministries of health effectively integrate products into their service delivery by helping revise standard diagnosis and treatment guidelines, develop standard procedures for product dissemination, and train pharmaceutical managers and health care providers.

Thirteen SPS portfolios addressed developing guidance documents to introduce new products, and SPS provided guidance to 11 countries on integration of new technologies into existing service delivery programs. For example, SPS worked with the DRC’s MOH and other partners to change the National Reproductive Health Program’s policy guidelines and the essential medicines list to incorporate the use of magnesium sulfate. SPS also helped the program begin reviewing the relevant technical guidelines and training materials on how to use magnesium sulfate appropriately.

SPS’s Comprehensive Support to Improving Adherence to new Diarrhea Case Management Guidelines

The WHO and the United Nations Children's Fund revised the recommendations for managing diarrheal disease in children under age five to include 10 to 20 mg zinc treatment for 10 to 14 days and the use of low-osmolarity oral rehydration solution. To help strengthen medicine and commodity management for diarrhea, the SPS Program provided technical assistance to countries to develop and implement global and national diarrhea management guidelines and tools, strengthen the procurement and distribution of effective medicines for diarrhea management, and ensure the rational use of diarrheal disease medicines in the public and private sectors.

Developing and Implementing Diarrhea Management Guidelines and Tools

SPS supported Missions and ministries of health in developing and implementing diarrhea management guidelines and tools, including—

- Developing and implementing a country assessment tool to introduce zinc. The tool helps the user analyze the processes needed to introduce or scale up the adoption of the recommendations. The tool, available in English and French, was successfully used in Indonesia and Madagascar.

Continued on page 29

- Providing technical assistance to ministries of health in the DRC, Senegal, and Tanzania to update national STGs for diarrhea management.
- Integrating zinc treatment into the private sector accredited drug dispensing outlet program in Tanzania.
- Contributing to the WHO document, *Implementing the New Recommendations on the Clinical Management of Diarrhoea Guidelines for Policy Makers and Programme Managers*. It includes information needed to introduce and scale up diarrhea management recommendations and incorporates the new oral rehydration solution formulation and zinc treatment guidelines. The publication is available in English, French, and Russian.

Strengthening the Procurement and Distribution of Effective Medicines for Diarrhea Management

SPS identified pharmaceutical registration issues and other challenges related to assuring medicine availability in a country. This technical assistance included—

- Worked with the Ministries of Health in DRC, Senegal, and Tanzania to add zinc and low-osmolarity oral rehydration solution to their national essential medicines lists.
- Helping the DRC MOH increase the transparency of the medicine registration process.
- Supported countries' efforts to improve their systems to quantify needs and procure diarrhea management-related medicines.
- Conducting a rapid assessment in DRC to evaluate zinc stock levels, analyze the levels related to consumption, and plan stock redistribution to avoid expiration.

Ensuring Rational Use of Diarrhea Medicines in the Public and Private Sectors

SPS helped ensure that providers in the public and private sectors and caretakers of children use diarrheal disease medicines rationally. Activities included—

- Conducting refresher orientations in diarrheal disease management, including zinc treatment, for accredited drug dispensing outlet program dispensers and supervisors in Tanzania.
- Helping develop and test job aids to encourage medicine dispensers to use and administer diarrhea treatment appropriately.
- Developing systems to track adverse events related to zinc treatment, which expand and link to other pharmacovigilance activities.

Increase Availability of Essential Medicines

The SPS approach avoided viewing pharmaceuticals as merely the beginning of a supply chain; instead, we based our interventions on the entire pharmaceutical management framework, which represents the flow of activities that must be coordinated to ensure that appropriate, high-quality medicines are available when patients need them. We developed interventions to strengthen the system in the long term, such as building capacity among facility level staff to track medicine consumption or working with the central medical store to develop an efficient distribution plan. SPS also provided short-term assistance when partners had immediate problems that threatened commodity security, such as assuring that pharmaceutical shipments are distributed on time to avoid treatment delay.

When Angola received its first shipments of ACTs, over 85% of the first order came in doses only for children under 8 years, which meant that facilities started to run out of the treatment for adults within months. SPS assessed each district's needs and developed a redistribution plan so that the health clinics could treat as many patients as possible with the stock available—preventing stock-outs and expiration. We also helped Uganda's National Medical Store resolve

an 8-week backlog of 3.8 million doses of ACT by developing and implementing a plan to process, package, and distribute the emergency supplies using private-sector transportation and hired labor. Within three weeks, the 3.8 million doses had been delivered—below budget. The emergency distribution went to 52 government hospitals and 214 health sub-districts, including three northern conflict districts that received 30,000 doses to cover the vulnerable population of children under seven.

Countries in the Amazon Basin documented over- and understocked antimalarials; contributing factors included decreasing malaria incidence in the region, which complicated the estimation of needs, and poor inventory control and management information systems. SPS worked with partners in the Amazon Malaria Initiative to create a multicountry information system on antimalarial supply using two pieces of routinely collected data. As a result of the new information, 1.5 million units of medication were transferred among the countries, and the Amazon Malaria Initiative donated 50,000 units valued at USD 69,000 to mitigate stock-outs of critical treatment, including for severe malaria.

Additional activities to help improve medicine availability included the following—

- Helped the South African government establish an ARV monitoring and early warning system that enabled timely interventions as needed. As a result, stock-out figures for ARVs in provincial warehouses decreased from 12% in 2009/10 to 2% in 2010/11.
- Worked with four districts in Kenya to pilot primary health care facilities' use of SMS to report medicines consumption. In six months, reporting rates using SMS had reached 100% for ARVs and laboratory commodity reporting among the 176 facilities. Review of the systems showed improved quality, timeliness, and completeness of data reported, which enabled more accurate and reliable quantification and resupply of medicines.
- Assisted staff at a South African hospital in learning how to use the full functionality of RxSolution to monitor ARV stock. As a result of the improved stock tracking and ordering, the availability of tracer medicines used in the treatment and care of HIV-positive patients improved by 84% in a year.
- Collaborated with the Government of Bangladesh to plan, implement, monitor, and provide training to staff on a web-based information system designed to ensure availability of contraceptives at government and NGO clinics. The system provides information on nationwide stock status of contraceptives and raises an alert if there is a possibility of stock shortage. It helps determine the amount of contraceptives needed and helps the government make evidence-based procurement decisions.
- Implemented the End Use Verification tool in nine countries, using it to monitor the availability of commodities and providing information on how malaria is being diagnosed and treated.
- Worked with the national medical stores in Ethiopia to streamline HIV/AIDS commodity distribution to health facilities. This combined with improved storage practices and more

efficient inventory control and tracking resulted in an uninterrupted medicine supply to the facilities with no expiries and no losses since 2004.

“During my tenure, the health system graduated from the level of ‘stock out’ to availability and rational use of medicines as indicated in the National Health Evaluation and Accreditations Reports 2009 and 2010. Of great impetus to my work is my ability to design and implement appropriate inventory control mechanisms to track the movement of drugs and medical supplies at the various health facilities. The pharmaceutical management operation was greatly improved after MSH/SPS began training dispensers—there is effective use of inventory tools. My supervision and monitoring exercises became easier and were less of a headache because trained dispensers were now managing and handling medicines at the various facilities.”

—Ethiopia Regional Pharmacist, Mr. Menmon Dunah

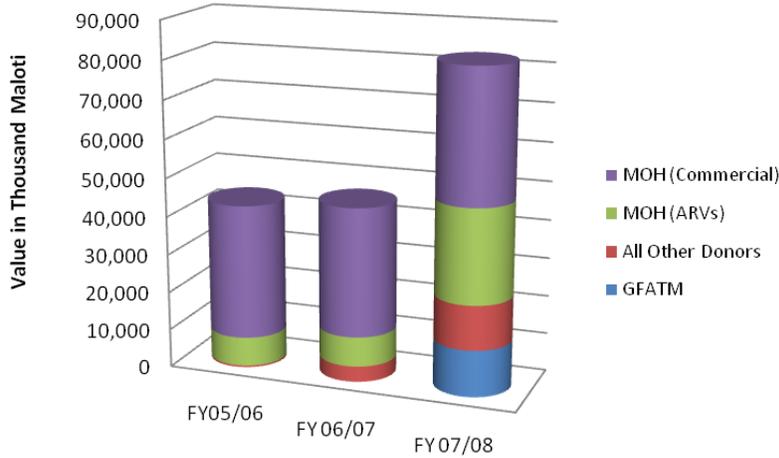
Controlling Costs and Maximizing Financial Efficiency

A pharmaceutical financing strategy should begin with making better use of available funds, but long-term financial sustainability may require a combination of financing mechanisms. SPS helped countries conduct cost analyses to inform policy decisions regarding containing costs, improving efficiencies, and financing options. To optimize access to and use of existing international financing mechanisms, SPS worked with dozens of recipients of Global Fund grants to effectively implement their procurement and supply plans and helped develop 34 Global Fund proposals—91% of the proposals to which SPS contributed were approved, including over USD 171 million to South Sudan alone.

SPS staff members were experienced in identifying and controlling excess costs related to medicine selection, procurement, distribution, and use. In 2008, SPS developed a cost allocation methodology that was applicable to the operations of the Lesotho’s central medical stores (NDSO). Working closely with medical stores staff, SPS collected and analyzed financial data using the cost allocation methodology to derive the cost of handling donated products, mostly financed by the Global Fund. The results of the costing study, along with future volume projections, formed the basis of recommendations to determine the marginal mark-up (or handling fee) that the central medical stores should receive from the MoH or a donor to maintain its financial viability. The board approved the recommendations, and as a result, the Global Fund began providing a reimbursement budget to compensate for handling the donated products.

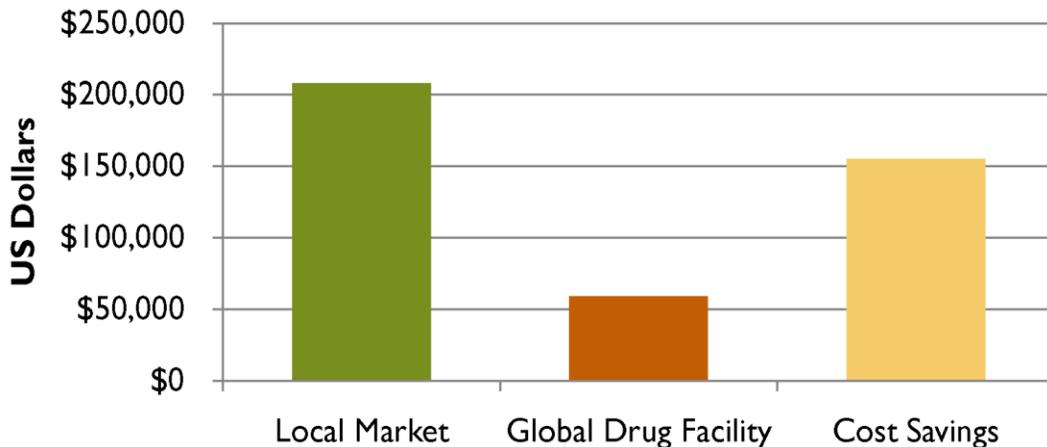
A 2008 study in the Dominican Republic demonstrated that stock-outs of medicines and supplies in public health facilities were largely due to fragmented procurement practices and lack of a standardized methodology to estimate needs. The MOH implemented a national integrated pharmaceutical system and asked SPS to provide assistance. Nine regional health offices and 13 public hospitals (responsible for the procurement of 80% of medicines and commodities) participated in a programming exercise based on SPS methodology to analyze consumption trends. The exercise revealed that 30% of medicines were stocked out and that the average price paid by peripheral facilities was more than 1,000% above the price paid by the central procurement agency. As a result, MoH authorities diverted most procurement to the central procurement agency and started a centralized price tender mechanism to establish reference prices and qualified suppliers for decentralized procurement. A national exercise produced the

evidence needed to make difficult political decisions that led to new procurement practices to increase transparency and procurement efficiency.



Value and Source of Products Received by NDSO from 2005–2008. Results of the SPS analysis showed that during fiscal year 2007–2008, the value of products received at the NDSO dramatically increased by 82% over the preceding year. The major increase was attributable to donated products. Also, 45% of NDSO’s costs came from managing donated products, primarily from the Global Fund, whose products made up 22% of total costs.

In South Africa, SPS collaborated with the Supply Chain Management Systems project and the Clinton Foundation to develop a pharmaco-economic model showing that by using international benchmarking techniques, the government could save money by selecting a safer ART regimen. As a result, South Africa saved about 53% on their next ARV tender with estimated savings of USD 650 million over the next two years. Based on that achievement, SPS contributed to the revision of the national essential medicine list by analyzing tender prices and identifying other procurement inefficiencies. SPS also identified an inefficient Dominican Republic policy of procuring TB reagents from high-priced local sources.



Comparison of the purchase prices of reagents in the local market in the Dominican Republic with the purchase of reagents through the Global Drug Facility, 2008. SPS analyzed the prices of lyophilized products and basic consumables on the local market with reagents and basic consumables from Global Drug Facility kits. MSH estimated savings to the Ministry of Public Health of approximately USD 150,000 for the purchase of these supplies through the GDF. As a result, the Ministry of Public Health passed Ministerial Resolution No. 0000007 on July 2, 2008, which establishes and supports the procurement of diagnosis supplies in the form of kits solely through the Global Drug Facility.

Other accomplishments related to cost savings and efficiency include the following—

- SPS led a rapid results initiative in Kenya to implement bite-sized, high-visibility, and momentum-building projects in 100 days. The Rapid Results Team developed an action plan and clearly defined milestones to reduce KEMSA’s delivery time. The team established the baseline delivery time and engaged stakeholders in analyzing the gaps in delivery. The team then developed appropriate interventions: re-map the distribution route, develop a real-time distribution schedule and communicate it to the lowest level, and “containerize” each facility’s consignment, so that the transporter can deliver directly to the facility without needing to search and sort in route. As a result, the 144 facilities received their shipments within 4 days from dispatch at KEMSA—a reduction of 60% in delivery time. The intervention was planned, implemented, and reported in 100 days.
- The Lesotho Ministry of Health and Social Welfare and the Global Fund raised concerns about the reliability of ART data captured at facilities, resulting in unreliable patient numbers. Consequently, the Global Fund put a condition precedent on Lesotho to strengthen ART data management before disbursing Round 8 funds. The Ministry, with technical support from SPS, carried out an ART data verification exercise at all 17 public hospitals in Lesotho and developed a robust data improvement plan. This plan ultimately led to the Global Fund disbursing funds.
- In South Africa and Brazil, SPS worked to improve the effectiveness of existing cost-recovery mechanisms, insurance/reimbursement schemes, and pharmacy benefits programs, and identified options for improvement.
- MSH’s support to Nyamata Hospital’s DTC in Rwanda resulted in a 12% reduction in the medicine procurement expenditures after 6 months and no expiries in 12 months.

INDIVIDUAL PORTFOLIO SUMMARIES

Afghanistan
2008–2011
Funding: \$5,276,000

Background

Since 2002, USAID has provided technical assistance for key issues in pharmaceutical management aspects to Afghanistan’s Ministry of Public Health (MoPH) and nongovernmental organizations through various MSH programs. In 2008, the USAID Mission invited the SPS Program to support to the MoPH to improve the pharmaceutical system. SPS worked to build the local capacity of the MoPH’s General Directorate of Pharmaceutical Affairs (GDPA) staff in various aspects of pharmaceutical management to effectively allow the GDPA to assume its role and responsibility for overseeing the public and private pharmaceutical sectors in Afghanistan. In Afghanistan, the SPS Program worked toward the following technical objectives—

- Improve the use of medicines through the development and implementation of Drug and Therapeutics Committees (DTC)
- Build the capacity of the MoPH and other partners to manage pharmaceutical services
- Build the capacity of the MoPH to assure the quality of pharmaceutical products entering into and used within the country
- Establish a coordinated procurement and distribution system (CPDS) within the MoPH for USAID and other donors
- In collaboration with USAID, other donors and the MoPH, design a system for USAID procurement of pharmaceuticals to follow the Tech-Serve Project.

Major Activities/Accomplishments

- Enabled the re-launch of the country’s National Medicines and Food Board and the establishment of a Secretariat comprised of a Medicine Committee and a Food Committee—all with new or revised terms of reference.
- Helped the MoPH establish a coordinated procurement and distribution system for all entities procuring pharmaceuticals for or distributing pharmaceuticals in the public sector. The CPDS facilitates information-sharing and provides the MoPH with a clearer picture of the public-sector pharmaceutical supply system’s structure and effectiveness.
- Provided technical assistance to the GDPA, Central Medical Stores, hospitals in Kabul, and other institutions to integrate components of pharmaceutical management into national strategies for improving access to essential medicines, especially related to quality assurance, rational use, procurement, distribution, and management information systems.
- Worked with the MoPH to conduct a national human resources assessment, which resulted in the development of a human resources strategic framework developed by a range of stakeholders and accepted by the MoPH.
- Supported stakeholders in development of a competency framework to map the existing pharmaceutical training curriculum; introduced that framework to relevant institutions as a resource for curriculum development and revision.

- Provided GDPA with critical systems and equipment to establish a functional and modern office infrastructure.
- Engaged a computer skills teacher and an English teacher to give lessons to GDPA staff; 70 staff members took advantage of the computer training in Word, Excel, and Access About 35 participated in the English classes, which have given GDPA staff access to meetings with donors and help in understanding many of the key pharmaceutical documents and books.
- Organized or facilitated 21 trainings for 728 trainees on variety of subjects related to managing drug supply and rational medicine use. Participants included representatives from national, provincial, and facility MoPH staff, Kabul University students, and private sector organizations.
- Worked with the GDPA and MoPH communications department to develop a strategy for developing health promotion materials for rational medicine use; sponsored a health messages course for more than 30 people that resulted in a health communications poster and radio and TV spots.
- Collaborated with the MoPH, the World Health Organization, and Kabul Medical University to develop strategic framework for the development of standard treatment guidelines (STGs) for the Basic Package of Health Services (BPHS); sponsored a STG stakeholders consensus workshop and gained wide support and buy-in from stakeholders; held a writers orientation workshop to introduce treatment guideline concepts and frameworks to teach specific guideline writing principles for 37 participants from the MoPH and Kabul hospitals. Guideline writing began in 2010 and they are being finalized under the SPS Afghanistan Associate Award.
- Helped refurbish the MoPH's Central Medical Stores. The renovated, well-lit warehouse is now air-conditioned to maintain the correct temperature range to maintain the quality of essential medicines.

Key Tools and Publications

- “Development and Application of Selected Indicators to Investigate Antimicrobial Use in Hospitals. “Presentation at the Third International Conference for Improving Use of Medicines (ICIUM 2011). November 14–18, 2011, Antalya, Turkey.
- “Strengthening Afghanistan's Pharmaceutical System: Opportunities and Challenges” (presentation for 10th Annual Global Health Mini-University).
- *Afghanistan Technical Report: Interim Findings and Conclusions of Drug Financing*
- *Afghanistan Drug and Therapeutics Committees and Training of Trainers Course: Detailed Training Report*
- *Afghanistan Medicine Use Study: A Survey of 28 Health Facilities in 5 Provinces* (English and Dari)
- *Afghanistan Medicines Quality Assurance Assessment—A Qualitative Survey* (English and Dari)
- *Assessment Report on Regulatory Framework and Structure for Medicines and Food in Afghanistan* (English and Dari)
- GDP Manual and Training Materials—in Dari
- *Leveraging Human and Financial Resources in Afghanistan* Report
- Pharmaceutical human resources assessment: National level: Form 1 (English and Dari)

- Pharmaceutical human resources assessment: Provincial level: Form 2 (English and Dari)
- Roadmap for the implementation of a coordinated procurement and distribution system of medicines in Afghanistan
- *Pharmaceutical Procurement & Distribution Systems in Afghanistan—Exploring Coordination Options*

Collaborating Organizations

- Afghan Ministry of Public Health (MoPH), to include Ghazanfar Institute of Health Sciences (GIHS), Quality Control Laboratories, and four of the seven MoPH general directorates:
 - General Directorate for Pharmaceutical Affairs (GDPA)
 - General Directorate for Human Resources (GDHR)
 - General Directorate for Administrative Affairs (GDAA) (managers of the MoPH Central Medicine Stores)
 - General Directorate for Pharmaceutical Enterprise (GDPE)
- Afghan Ministry of Higher Education including the Faculty of Pharmacy, University of Kabul
- Coordinated Procurement and Distribution System representatives from:
 - NGOs contracted to implement the Basic Package of Health Services
 - JICA
 - World Bank
 - European Community
 - United Nations agencies
 - WHO
- Health Systems Strengthening Program
- Tech-Serve Project
- Participants in Data Collection Sessions on Rapid Assessment of Medicines Quality Assurance: MoPH
- Participants in Drug Sample Collection Methodology: MoPH
- Participants in Drug Use Study: MoPH, Shaid Sardar Mohamad Dawod Khan Hospital and Maiwand Hospital
- Participants in Drugs Therapeutic Committee Course: MoPH, Ibn Sina Emergency Hospital, Mazar-i-Sharif General Civil Hospital, Stomatology Hospital, Antani Hospital, Atah Turk Hospital, Shaid Sardar Mohamad Dawod Khan Hospital, 600 Beds Hospital, Fayzabad Hospital, Maiwand Hospital, Rabia Balkhi Hospital, University Teaching Hospital of Nangahar Provincial Hospital, Isteqlal Hospital, Maiwand Hospital, Ali Abad Hospital, Malalai Maternal Hospital, Child Health Institute of Indira Gandhi Hospital, General Hospital of Public Health Hospital, University Teaching Hospital of Nangahar Provincial Hospital, Taluqan Central Hospital, Farkhar Hospital
- Participants in Good Dispensary Practice Course: MoPH
- Participants in Managing Drug Supply Course: MoPH
- Participants in Managing Drug Supply and Rational Drug Use Course: MoPH, Kabul University
- Participants in Quality Assurance Presentation: MoPH

- Participants in Rational Use of Medicines Health Message Evaluation: MoPH, MSI, Save the Children, HealthNet Trans-cultural Psychosocial Organization, Tak Production, ICICH, Care for Afghan Families, and HPU

Acknowledgements

The SPS Afghanistan program was successful in large part due to broad support from all departments of the MoPH. In particular, the Minister of Public Health, Dr. Suraya Dalil, and the General Director of GDPA, Dr. Hafiz Quraishi, were critical partners. The project's Agreement Officer's Technical Representative for two and one-half of the three years, Ms. Susan Brock, was also an invaluable collaborator and advocate for the important work of SPS.

Amazon Malaria Initiative

2007–2012

Funding Leader: \$483,280/Associate: \$4,600,000

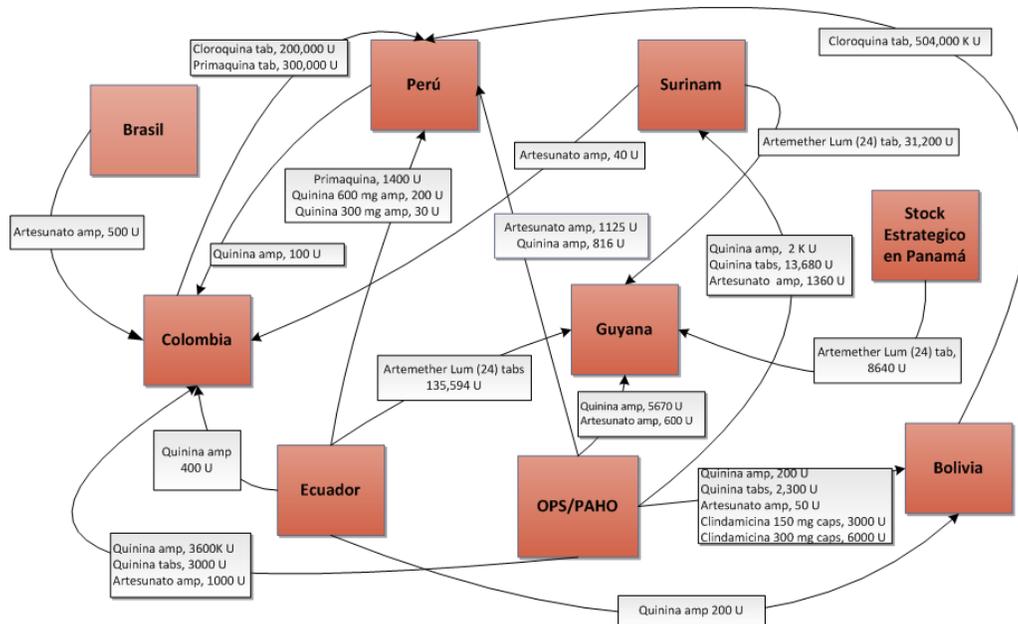
Background

USAID launched the Amazon Malaria Initiative (AMI) in 2001 to combat the increased prevalence of malaria in the countries that form the Amazon basin. After the seven initial countries conducted *in vivo* efficacy studies which confirmed drug resistance, the countries changed their drug policies to include new and more efficacious artemisinin-based combination therapies (ACTs). Since the launch of AMI, malaria prevalence has declined by more than half in the region. SPS was an AMI partner of from October 2007 to September 2012. SPS collaborated with other AMI partners to develop and implement strategies to strengthen malaria pharmaceutical management in the region, particularly related to new treatment policies. Despite these advances, studies conducted by SPS have documented problems with the availability of medicines, some arising from vendors' lack of interest in selling the small quantities now required because of the reduced incidence of the disease.

Major Activities/Accomplishments

- Introduced pharmaceutical guidelines for primary health facilities. The introduction of these guidelines in Peru and Bolivia came after a study showing deficiencies in the knowledge and abilities of the personnel.
- Developed a regional system to monitor antimalarial stock. Through the exchange of medicines and donations, this system has prevented stock outs in most AMI countries.
- Conducted in-depth studies and operative research to support decision making. Among other studies, SPS assessed the implementation of the introduction of ACTs and other malaria control strategies. The results of this study have been shared with national malaria programs and cooperation agencies and published in an international journal.
- Revised technical criteria for the estimation of needs and distribution of antimalarials in low incidence areas. Working meetings have been organized in Honduras, Nicaragua, Ecuador, Peru and Bolivia. The revised criteria are guiding the procurement and distribution of medicines in these countries.
- Institutionalized supervision systems in health facilities. These supervision systems are currently improving the performance of malaria diagnostic and treatment facilities in Colombia, Bolivia, and Brazil.





Exchange/ donation of medicines in AMI countries

Key Tools and Publications

- Barillas, Edgar, Claudia Valdez, and Silas Holland. 2008. *State of Malaria Pharmaceutical Management in the Amazon Basin Countries*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Edgar Barillas. 2009. *Análisis de la disponibilidad de medicamentos antimaláricos en los países que comparten la Cuenca de Amazonas [Analysis of the availability of antimalarial medicines in countries sharing the Amazon Basin]*. Presented to the US Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems (SPS). 2009. *Technical Report: Analysis of Prescribing and Dispensing Practices and Adherence to Malaria Treatment in the Amazon Basin Countries*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Sánchez López, A. Barillas, Edgar 2009. *Implications of the Low Prevalence of Malaria for Managing Medicine Supplies: Technical Report*. Prepared by the Strengthening Pharmaceutical Systems Program, at the request of the United States Agency for International Development, under the Amazon Malaria Initiative. Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems. 2009. *Technical Report: Status of the Supply of Laboratory Materials and Supplies Used in Malaria Control in Countries of the Amazon Basin, October 2009*. Submitted to the United States Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.

- SPS, 2010. Success Story: *AMI: Development of Supervision Systems for Managing Availability and Use of Antimalarial Medicines*
- SPS, 2011. Success Story: *A New Medicine Monitoring System Helps Prevent Antimalarial Stock-Outs in the Americas Region.*
- Flores, W. 2011. *Impact of Artemisinin-Based Combined Therapy for Malaria in Various Countries and Implications for the Countries of the Amazon Basin: Final Report.* Presented to the United States Agency for International Development by the Strengthening Pharmaceutical Systems Program (SPS). Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems (SPS). 2010. *Informe técnico: Análisis de los criterios de selección, programación de necesidades y adquisición de medicamentos antimaláricos en los países que comparten la Cuenca del Amazonas.* Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
- Marmion, John, Henry Espinoza Nov. 2011. *Analysis of Antimalarial Medicine Availability in Amazon Basin Countries.* Presented to the United States Agency for International Development through the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health
- SPS, 2011. Policy Brief: *Status of the Supervision of Malaria Diagnostic and Treatment Posts in Countries of the Amazon Basin*
- Jiménez, Magdalena, Claudia Valdez, John Marmion and Edgar Barillas. 2012. *Status of Antimalarial Supply Management in Countries of the Amazon Basin and Central America, October 2011.* Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health (MSH).

Collaborating Organizations

The other partners in the Initiative include the Pan American Health Organization Infectious Disease Division, the US Centers for Disease Control and Prevention, the US Pharmacopoeia Promoting Quality of Medicines Program, national malaria control programs in the Amazon and Central American regions, and the local USAID Missions.

Bangladesh
2009–2011
Funding Leader: \$700,000/Associate \$1,700,000

Background

Since late 2009, the SPS/Bangladesh Program has been providing technical assistance to the Directorate General of Family Planning (DGFP) under Bangladesh’s Ministry of Health and Family Welfare (MOHFW) and other national stakeholders to improve procurement management systems for reproductive health commodities, strengthen existing distribution and management information systems (MISs), and build the local capacity to for a stronger health system.



Major Activities/Accomplishments

Transparency and accountability

- Strengthened the Logistics Coordination Forum that oversees logistics matters for all reproductive health commodities. The Logistics Coordination Forum now meets regularly, identifies priority action items, and implements their terms of reference.
- Supported the MOHFW to establish a Forecasting Working Group centered at the MOHFW. The Forecasting Working Group is critical for estimating the need for demand for reproductive health commodities and TB medicines. The technical working group also monitors the stock status of family planning commodities and pipelines, and provides monthly stock situation data for decision making. Due to the success of the Forecasting Working Group, it will extend its work to also include vaccines and essential drugs.
- Provided technical assistance to the MOHFW to review and develop two important policy documents; namely the procurement procedures manual (PPM) and the DGFP supply manual. These documents have been institutionalized by the GOB and define the roles and responsibilities of key players, structures for health commodity supply chain management in the country, and procedures to be followed when procuring and managing logistics.
- Improved the supply chain information portal, a web based dash board that serves as the main entry point from which a set of web-based tools that can be accessed by the DGFP, as well as registered public users. The portal provides puts access to real time stock status of family planning commodities, the status of procurements and other key information at the fingertips of decision makers. See the graphic to the right for the four major components of the portal. By transitioning operations of the portal to the MOHFW, SPS is helping the MOHFW to add another tool that can improve transparency and information sharing for decision making. National, regional, and Upazila (sub-district) level officials of DGFP enter procurement and logistics related data in the portal and the dashboard presents charts, maps and tables for decision makers. The portal is unique in terms of information management in

the public sector. These tools have improved information sharing and prompted quick decision making whenever intervention is needed. Such positivity could be illustrated by the number of Government of Bangladesh senior health officials visiting the portal, as well the use of data to refine/revise procurement, distribution, and redistribution of family planning commodities to avoid stock outs.

Procurement

In a large Ministry with 32 procuring entities, procedures and plans needed to be standardized in order to comply with procurement procedures and cycles. To assist the MoHFW, SPS—

- Introduced coordinated procurement planning for MOH procurement entities by supporting government to develop an 18-month procurement plan from 32 operational plans with pooled funding under the government's Health, Population, and Nutrition Sector Development Program. The plan was endorsed by the World Bank.
- Improved capacity within DGFP to manage the procurement processes effectively and efficiently e.g. Facilitated bidders' orientation, reviewed bid documents, and enhanced the request for tender documents, such as the bid data sheet.
- Provided technical assistance to open all Letter of Credits of all packages of DGFP on time in all procurement cycles during SPS period (completion of procurement process) to ensure adequate stock of reproductive health commodities.
- The DGFP Online Procurement Tracker received two prestigious awards—the National Digital Innovation Award 2011 and the National Digital Innovation Fair Award 2011—in the categories of e-Health and e-Governance.

Supply management

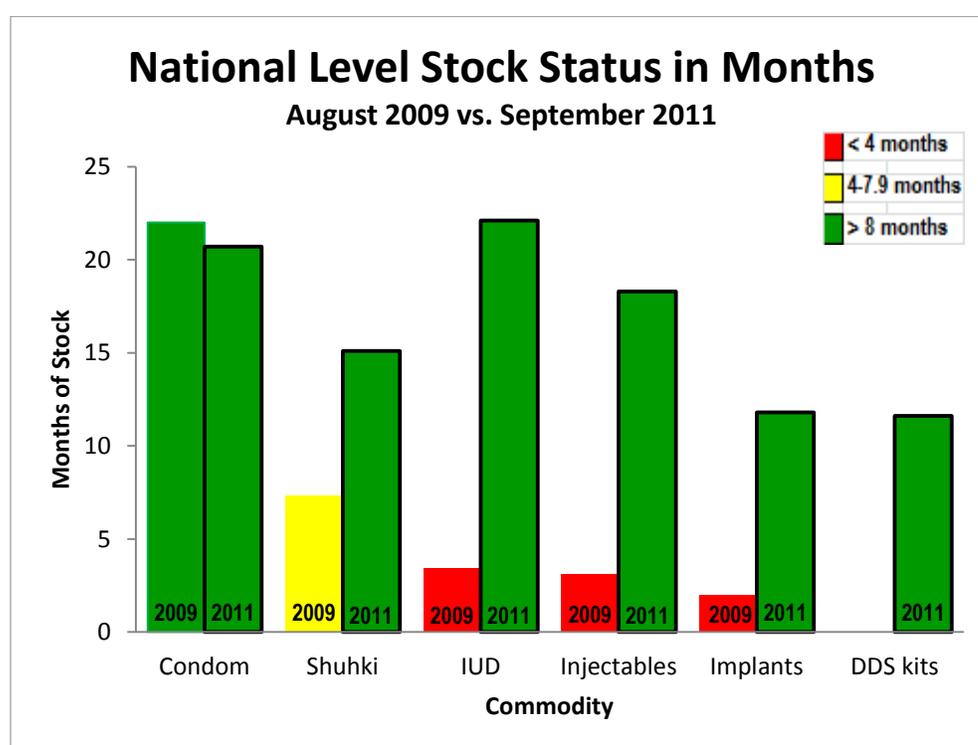
- Collaborated with the Ministry to conduct assessments to identify priority areas for strengthening logistics management systems and the capacity of MoHFW staff. The assessments reports and recommendations were used to tailor interventions to address supply chain management challenges, with a focus on family planning.
- Assessed the functionality and efficiency of DGFP logistics management tools, including the warehouse inventory management system, Upazila inventory management system, and web-based LMIS to support timely evidence-based decision making. SPS assisted DGFP to update these tools and standardize reporting formats to ensure accurate, accessible, and timely data is available. Additionally, SPS supported basic and refresher trainings for MOHFW staff.
- Continued to work with staff of DGFP's Logistics and MIS units to analyze and generate routine logistics reports including monthly stock status reports, scenario analysis, and supply planning reports, etc. and ensure regular updates of the web-based procurement tracking system and commodity status dashboard.
- Worked with DGFP to introduce split delivery to avoid over and under stocks at central and regional warehouses.

Capacity building

- Collaborated with MoHFW to conduct a needs assessment of DGFP based on a competency framework, which will form the basis for a capacity-building strategy for staff.
- Used training, onsite mentorship, workshops and conferences, to support the MoHFW to build capacity of staff in: procurement management, logistics management information systems, quantification (forecasting & supply planning), and inventory management.

Highlights of results

- In less two years, the Bangladesh MOHFW achieved their goal of eliminating stock-outs of family planning commodities at the national level.



Source: DGFP Supply Chain Information Portal (www.dgfplmis.org)

- The government set a target of reducing the percentage of upazilas that experience a contraceptive stock-out at any point during a given period to 5%. The government exceeded their target by reducing the percent of stock outs to less than 2%.
- Reduction in procurement time from 78 weeks in August 2009 to 58 weeks in September 2011.
- The DGFP set a target of opening 85% of letters of credit for contraceptives procurement packages on time in each financial year. DGFP exceeded the target of 85% by reaching 100%.
- The number of Upazilas using the Upazila inventory management system increased from 108 to 173; 100% of Upazilas submitted reports on time in 2011.

- Through stock status monitoring and supply pipeline reviews, SPS helped the DGFP reduce procurement of excess family planning commodities.

Real-time data enabled the MOHFW to save 12 million taka

SPS worked with the MOHFW to critically review web-LMIS reports. The LMIS reports revealed that a large number of AD syringes were lying in excess of injectables in warehouses and service delivery points. Based on solid forecasting and real time logistics data, the MOHFW revised their 2011-12 procurement plan and procured 2 million fewer syringes, which led to a savings of 12m taka (US \$20,000).

Key Tools and Publications

- Assessment reports
 - *In-depth Evaluation of the Procurement Management Capacity of the Directorate General of Family Planning*
 - *Review of Procurement Management Capacity of the Social Marketing Company, Bangladesh*
 - *Comprehensive Assessment for the Government of Bangladesh, Directorate General of Health Services, Central Medical Stores Depot*
 - *Assessment of Warehousing and Logistics System Building Procurement and Supply Chain Management Capacity for the Directorate General of Family Planning, Bangladesh*
- *Cross-Learning Study Tour at Social Marketing Company Warehouse for DGFP Logistics Staff Members*
- DGFP Supply Chain Information Portal
- Draft MOHFW Supply Chain Management Portal
- Upazila Inventory Management System, version 2
- Procurement Procedures Manual
- Revised DGFP Supply Manual

Collaborating Organizations

- Engineering Staff College
- SoftWorks
- MOHFW (DGFP, DGHS, NTP, DGDA)
- Smiling Sun Franchise Program
- World Health Organization
- World Bank

Acknowledgements

SPS is thankful for the generous support from USAID and close collaboration with MoHFW partners. It was an honor to have the opportunity to support the MoHFW's goals and objectives. SPS would like to acknowledge the stewardship and fruitful collaboration of the Secretary of the MoHFW, the Joint Secretary of the MoHFW for Development and Medical Education, and

DGFP Director General. SPS would also like to acknowledge the collaboration, stewardship and accomplishments of all line directors in the MOHFW, health facilities staffs, and other dignitaries. Additionally, other key stakeholders (such Engineering Staff College, SoftWorks, WHO, and the World Bank) contributed to the success of efforts of the program.

Antimicrobial Resistance (AMR)

2007–2012

Funding: \$2,415.484

Background

Health gains are seriously threatened by the rapidly growing problem of antimicrobial resistance (AMR), including multi-drug resistance. Counting primarily on new antimicrobials to deal with AMR is no longer a viable option, as the antimicrobial development pipeline is increasingly dry. The key emphasis should be on preventing the development of AMR and *preserving the effectiveness of the existing antimicrobials*.

Resource-constrained countries often lack the needed awareness, advocacy, policies, programs, capacity, and system strengths to adequately deal with the complex and multi-faceted challenge of AMR. To help address this gap, USAID included a dedicated intermediate result relating to AMR in the SPS award. SPS used approaches and tools developed as well as experiences from its predecessor program, RPM Plus, to strengthen country and regional stakeholders' capacity to combat AMR. SPS also paid special attention to help implement cross-cutting and system-wide interventions that are often not adequately covered by vertical disease programs.

Key accomplishments of the SPS AMR activities were to—

- Increase capacity of in-country and regional stakeholders to advocate and network for AMR containment and implement interventions to improve antimicrobial management and use at institutional and community level
- Increase in-country stakeholders' capacity to implement interventions that improve infection prevention and control practices

Major Achievements/Accomplishments

- Facilitated regional-level AMR coalition-building initiatives leading to advocacy through call-to-action documents and meetings and subsequent packages of interventions. For example, the Ecumenical Pharmaceutical Network and its members organizations carried out more than 120 AMR advocacy and intervention actions from 2008 to 2011; provided ongoing support to Zambia and Ethiopia working groups to consolidate country-level AMR advocacy and containment processes and helped jump-start a similar initiative in Rwanda.
- Supported Drug and Therapeutics Committees (DTCs) training and follow-up programs, resulting in establishment or restructuring of hundreds of DTCs and medicine use improvement activities.
- Supported self-assessment-based infection control activities in health facilities that led to significant improvement in infection control practices in Guatemala, Namibia, South Africa, and Swaziland, including measureable improvements in hand hygiene in the participating hospitals.
- Applied an indicator-based hospital antimicrobial use study tool in Afghanistan, which identified several antimicrobial use problems and led to recommendations and interventions relating to DTCs and standard treatment guidelines.

- Continued support for orientation and training of the facility health care workers on the ART adherence measurement tool developed in South Africa. The National Department of Health adopted and included this tool in the 2010 National ART Treatment Guideline for nationwide implementation.
- Provided technical assistance for preservice curriculum reform that led to the inclusion of appropriate AMR and rational medicine use topics in the revised and finalized curricula offered by the University of Zambia's School of Medicine and the National University of Rwanda's School of Pharmacy.
- Collaborated with Tanzania Food and Drugs Authority and other local stakeholders to improve community antimicrobial use by strengthening dispensing/counseling practices of the private sector accredited drug dispensing outlet dispensers through job aids, educational materials, training, and supportive supervision. This initiative led to measurable reductions in inappropriate dispensing of antibiotics for nonbloody diarrhea and acute upper respiratory infections, and improved knowledge of clients on the dispensed medicines.
- Provided technical support for the development, finalization, and publication of an AMR course for the USAID eLearning Center. The course is published and available for global use.
- Collaborated with various international/regional bodies listed in the section below to support global AMR advocacy, coordination, and communication. Also supported the third International Conference on Improving the Use of Medicines (ICIUM 2011) as member of the AMR track.

Key Tools and Publications

- *Building Local Coalitions for Containing Drug Resistance: A Guide* (Revised, 2011)
- *Infection Control Self-Assessment Tool and User Manual* (Revised, 2009)
- *How to Investigate Antimicrobial Use in Hospitals: Selected Indicators* (2008)
- *Indicator-Based Pharmacovigilance Assessment Tool* (2009)

Conference Presentations

International Pharmaceutical Federation, Istanbul (2009)

- Using Regional Pharmaceutical Organizations as Multipliers in Expanding the Scope and Impact of Antimicrobial Resistance Initiatives [oral]

International Pharmaceutical Federation, Lisbon (2010)

- Capacity-building for advocacy and actions to contain antimicrobial resistance: experiences and lessons [oral and poster]

American Public Health Association, Denver (2010)

- Reforming Pre-service Curriculum as a Sustainable Low-Cost Intervention to Address Antimicrobial Resistance [poster]

1st Global Forum on Bacterial Infections: Balancing Treatment Access and Antibiotic Resistance, New Delhi (2011)

- How to Build Local Coalitions for Containing Drug Resistance: Country-Level and Regional Experiences [oral]
- Engaging Private Sector Drug Dispensers to Improve Antimicrobial Use in the Community: Experience from the Piloted ADDO AMR Initiative in Tanzania [oral]

International Conference on Improving Use of Medicines, Turkey (2011)

- Drug and Therapeutics Committees in Africa and Asia: From Training to Implementation [oral and poster]
- Capacity-Building for Country and Regional-Level Advocacy and Interventions to Contain Antimicrobial Resistance in Africa [oral and poster]
- Development and application of selected indicators to investigate antimicrobial use in hospitals [poster]
- Engaging private sector drug dispensers to improve antimicrobial use in the community: Experience from the accredited drug dispensing outlets, Tanzania [poster]
- Development and implementation of a multi-method medication adherence assessment tool suitable for antiretroviral therapy facilities in resource-constrained settings [oral and poster]
- Implementing a self-assessment and continuous quality improvement approach to improve hospital infection control practices in Africa and Latin America [poster]
- Indicator-based survey tool to determine the use of antimicrobials and knowledge about drug resistance in the community [poster]

Collaborating Organizations

- Center for Disease Dynamics, Economics & Policy (CDDEP)
- Center for Global Development (CGD)
- Ecumenical Pharmaceutical Network (EPN)
- International Pharmaceutical Federation (FIP)
- Macro International
- ReAct—Action on Antibiotic Resistance
- Regional Pharmaceutical Forum (RPF) of ECSA
- University of Washington
- World Health Organization (WHO)

Acknowledgements

We would like to acknowledge and thank the various ministries of health, AMR task forces, other government agencies, health care facilities, and pharmacy and therapeutic committees as partners in our AMR activities, in addition to collaborating organizations that may not have been mentioned above.

Angola
2007–2011
Funding: \$2,309,000

Background

Since 2007, SPS collaborated with other USAID implementing partners and nongovernmental organizations and United Nations development partners to assist the Angola Ministry of Health's (MOH) National Essential Medicines Program to implement pharmaceutical management strengthening interventions at central and lower levels of the health care delivery system. The country program's vision is to assure the availability and access to quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes.

Specific technical objectives were to—

- Strengthen the Angolan pharmaceutical management system to ensure availability and appropriate use of essential public health commodities
- Strengthen the capacity of the national pharmacovigilance system to improve the safety of medicines in the public sector
- Improve coordination among pharmaceutical management stakeholders at the central level

Major Activities/Accomplishments

- Helped the MOH distribute USAID-funded shipments of malarial diagnostic and treatment and HIV/AIDS prevention commodities to health facility level; this included 23,605,630 artemisinin-based combination therapy (ACT) packs, 5,129,650 rapid diagnostic tests, and 17 million condoms.
- Developed a customized pharmaceutical management training approach and materials based on MOH standard procedures for pharmaceutical management; trained a local core group of 2 MOH trainers who then trained 265 medical warehouse and health facility staff from 18 provinces.
- Reproduced 5,500 patient registers, 150,000 stock cards, 100,000 weekly balance sheets, and 100,000 prescription pads, so that health staff could use the materials to practice good pharmaceutical management and prevent stock-outs.
- Supported the MOH to conduct supportive supervision and mentoring of staff at 55 service delivery points; supported the MOH HIV/AIDS control program to develop and implement a tracking tool for monitoring distribution of condoms and HIV rapid test kits as part of ongoing supervision.
- Supported three MOH staff members to attend international trainings and conferences on supply chain management and on improving the use of medicines.
- Helped form and implement ongoing central-level meetings and a technical working group to promote coordination among stakeholders for improved pharmaceutical management (National Reproductive Health Technical Working Group and the Inter-Agency Coordination Committee for Municipal Revitalization-Logistics Group).
- Helped the MOH assess laboratory supply chain management and medicines use and safety, which helped identify gaps for future system strengthening interventions.

- Supported a pharmacovigilance study tour to Kenya for four staff members; upon return, the team led the development of local reporting forms on adverse medicines reactions and poor quality of medicines, adapted from the Kenya forms.
- Conducted pharmacovigilance orientations with national hospital staff in Luanda and provincial and municipal hospital staff from five provinces.
- Provided technical assistance to the MOH to implement strategic monitoring tools, including SPS's End Use Verification tool, the Procurement Planning, Monitoring and Reporting for malaria tool; the ACTs quarterly and annual forecasting tool; the Coordinated Procurement Planning for HIV/AIDS initiative, and the Pharmaceutical Management Systems Strengthening tool. Data collected through these tools were shared through local coordination meetings with the MOH, USAID, and other local partners, to inform decisions related to pharmaceutical supply chain management.

Key Tools and Publications

- Strengthening Pharmaceutical Systems (SPS). 2010. *Gestão e Controlo de Medicamentos: Manual de Formação para Unidades Sanitárias – Participante-Direção nacional de Medicamentos e Equipamentos (DNME)*. Submetido a Agência dos Estados Unidos para o Desenvolvimento Internacional pelo Programa SPS. Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems (SPS). 2010. *Apresentação Gestão e Controlo de Medicamentos para Unidades Sanitárias-Direção Nacional de Medicamentos e Equipamentos (DNME)*. Submetido a Agência dos Estados Unidos para o Desenvolvimento Internacional pelo Programa SPS. Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems (SPS). 2010. *Gestão e Controlo de Medicamentos: Manual de Formação para Depósitos – Participante-Direção nacional de Medicamentos e Equipamentos (DNME)*. Submetido a Agência dos Estados Unidos para o Desenvolvimento Internacional pelo Programa SPS. Arlington, VA: Management Sciences for Health.
- Strengthening Pharmaceutical Systems (SPS). 2010. *Apresentação Gestão e Controlo de Medicamentos para Depósitos -Direção Nacional de Medicamentos e Equipamentos (DNME)*. Submetido a Agência dos Estados Unidos para o Desenvolvimento Internacional pelo Programa SPS. Arlington, VA: Management Sciences for Health.

Collaborating Organizations

- AFRICARE
- Catholic Relief Services
- US Centers for Disease Control and Prevention/Angola
- CONSAUDE
- Mentor Initiative
- Ministério da Saúde (Ministry of Health), Angola
- MOH/DNME–Direção Nacional de Medicamentos e Equipamentos (National Directorate of Medicines and Equipments)
- MOH/INLS–Instituto Nacional de Luta Contra SIDA (National Institute for the Fight Against AIDS)
- MOH/PNCM–Programa Nacional de Control da Malaria (National Malaria Control Program)

- MOH/PNME–Programa Nacional de Medicamentos Essenciais (National Essential Drugs Program)
- MOH RH/FP–Ministry of Health Reproductive Health/Family Planning program
- Serviços Essenciais de Saúde/Angola
- United Nations Development Programme/Angola
- United Nations Population Fund/Angola
- United Nations Children’s Fund/Angola
- USAID/Angola Mission
- USAID/DELIVER
- World Health Organization/Angola
- World Learning
- World Vision

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We would like to acknowledge and thank USAID/Angola Mission, the Angola MOH DNME, PNME, NMCP, INLS, RH/FP Program and various other national and local government agencies, health care facilities, USAID/IPs, in addition to collaborating organizations that may not have been mentioned above.

Ethiopia
2007–2011
Funding Leader \$10,898,120/ Associate: \$3,800,000

Background

The SPS Program in Ethiopia contributed to specific President’s Emergency Plan for AIDS Relief and President’s Malaria Initiative (PMI) program targets by providing technical support to antiretroviral therapy (ART) and artemisinin-based combination therapy (ACT) sites for appropriate dispensing and rational medicine use, including the expansion and maintenance of a pharmaceutical management information system. For assuring sustainability of interventions and strengthening systems, SPS supported institutional capacity-building of national organizations, such as the Drug and Control Authority (now called Food, Medicine, and Health Administration Control Authority- FMHACA), the Pharmaceutical Fund and Supply Agency (PFSA), schools of pharmacy, the Ethiopian Pharmaceutical Association, the Ethiopian Druggists Association, regional health bureaus, and health facilities in all aspects of patient-focused pharmaceutical management systems. Through training, mentoring, and embedding technical staff, the support focused on improving pharmaceutical good governance, promotion and implementation of rational medicines use, containing the emergence and spread of antimicrobial resistance (AMR), promotion of treatment adherence, and medicines safety to improve treatment outcomes.

Major Activities/Accomplishments

Institutional capacity building

- Played a lead role in the development of the pharmacy chapter of the Ethiopian hospital reform implementation guidelines (2010); list of medicines for Ethiopia, 6th ed. (2010); list of essential medicines for Ethiopia, 4th ed. (2010); participated in the development of 39 standards for health facilities; provided technical support to FMHACA to develop a Good Manufacturing Practices guidelines, the Medicines Waste Management and Disposal Directives and the National Strategic Framework on Medicines Waste Management.
- Helped implement the above pharmacy chapter at three hospitals; observed improved services. For example, in Debre Markos Referral Hospital, showed an extraordinary improvement in facility-specific drug list utilization—98.2%.
- Seconded four SPS senior pharmacists to FMHACA to fill the critical gap caused by the shortage of senior staff. These pharmacists helped FMHACA develop the regulatory standards and guidelines.
- Seconded 17 technical staff to FMHACA branches and donated five Toyota Land Cruiser vehicles, 19 computers, and 2 printers, and 10 minilabs for rapid testing.
- Supported the development of documents, including quality manuals, safety manuals, and standard operating procedures (SOPs); collaborated with US Pharmacopeial Convention Drug Quality and Information program to provide technical assistance to FMHACA’s drug quality control lab.
- Supported PFSA to establish a Rational Use of Medicines Unit at head-office level; embedded two pharmacists who helped institutionalize rational medicine use activities and drug and therapeutics committees (DTCs).

- Helped the Ethiopian Pharmaceutical and Druggists Associations to conduct continuing education and trainings on pharmaceutical ethics to public and private sector pharmacists and druggists. Pharmacists in private practice did not handle antiretrovirals (ARVs), but following the training they started providing ART counseling.

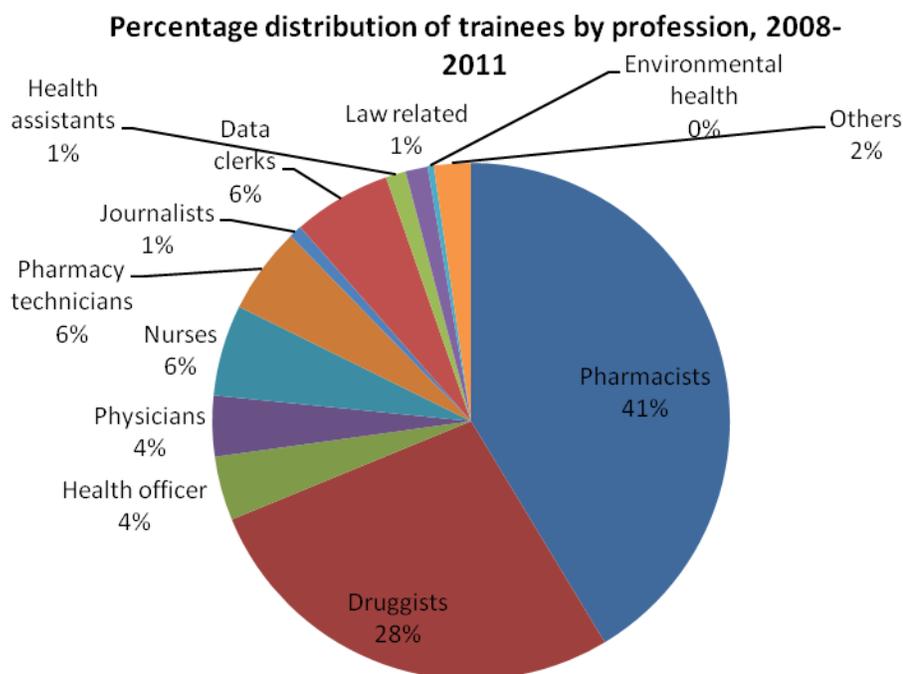
Pharmaceutical human resources capacity building

- Carried out pre-service ART training for graduating pharmacy students in collaboration with the schools of pharmacy of public universities; SPS's in-service training program has helped pharmacy personnel develop their skills.
- Facilitated 90 different training sessions and trained a total of 7,945 health professionals; nearly four in ten training participants were pharmacists. For detail see the table and pie chart below.

Number of Trainees by Type of Training, 2008–2011

Training type	Year				Total
	2008	2009	2010	2011	
ARV medicines SOPs	988	706	358	297	2,349
HIV care and ART and pre-service	481	109	229	365	1,184
Management and rational medicine use	343	-	98	89	530
Management and inventory control (orientation for third-year students in four universities)	253	-	-	-	253
AMR	-	-	24	-	24
DTCs	307	-	330	374	1,011
Drug information systems	293	-	-	-	293
GCPP	320	-	-	-	320
Pharmacy ethics and promoting standard practice	694	-	-	-	694
Pharmacovigilance	-	33	82	29	144
AMDM	-	-	431	231	662
FDC	42	-	-	-	42
Pharmaceutical good governance	-	-	176	-	176
Rural drug vendors	-	-	-	263	263
Total	3721	848	1728	1648	7,945

Source: Training Unit, SPS- Ethiopia



- Developed and updated training materials achieve the training objectives; established a training database capable of producing important reports regarding pharmacy human resource development. The database also has a pool of trainers, which has been helpful in selecting teachers with the most relevant background.
- Conducted a five-day training-of-trainers course on pharmaceutical care and pharmacovigilance in collaboration with Jimma University in Ethiopia and the University of Washington. This training was intended to build the capacity of 37 faculty at the schools of pharmacy at Addis Ababa University, Gondar University, Jimma University, and Mekele University to promote pharmacovigilance.

Excerpt from Jimma University's letter to SPS:

Dear SPS delegates,

We don't have the words to express our special and secure appreciation, honor, and gratitude for you....We learned the responsibility for and accountability and commitment to our patients, our profession, to society, and to country from a group of dedicated, industrious, enthusiastic senior pharmacists and experts.

Thank you SPS!

- Supported partners to provide trainings on SOPs for the ART Dispensing Tool to pharmacy professionals.
- Collaborated with FMHACA and Oromia RHB to initiate a training program for rural drug vendors (RDVs) to improve the quality of service and access to essential medicines provided

to the rural population; developed a RDV training curriculum, training materials, and job aids, reference materials, mentoring and supportive supervision materials; trained 217 RDVs and 46 officials from the regulatory office of the zonal health department and FMHACA

- Supported the FMHACA to develop the first RDV formulary through a consultative workshop with experts from Addis Ababa University, FMHACA, SPS, and selected hospitals; printed and distributed the formulary and medicines list to RDVs.

Drug and therapeutics committees

- Collaborated with PFSA to help 174 health facilities establish DTCs. The DTCs went on to develop terms of reference, action plans, and hospital-specific medicine lists (63); assess medicine use problems and designed intervention strategies; establish drug information services (19); and conduct patient education to improve treatment outcomes by promoting the safe use of medicines.

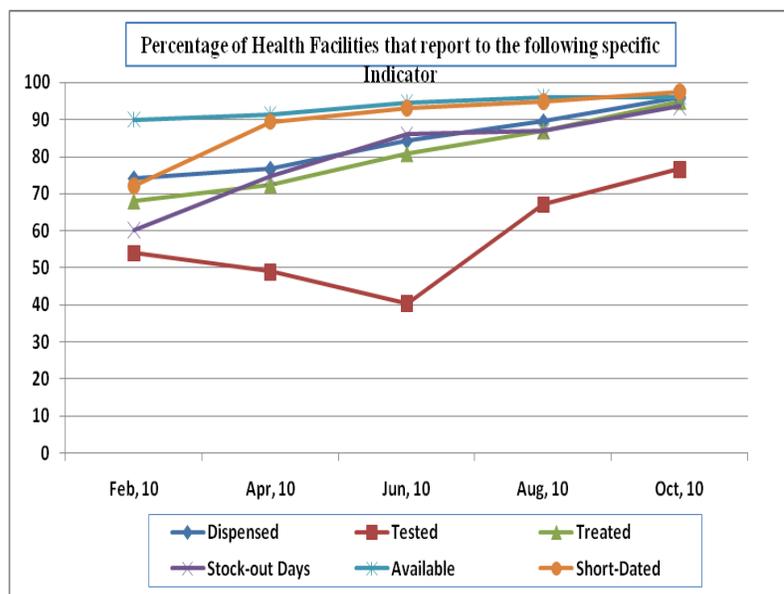
Rational drug use

- Helped establish adverse drug reaction (ADR) monitoring systems at national and health facility levels; conducted a national baseline survey on ADR and supported the development of ADR reporting guidelines—
 - Incidents have been reported for more than 30 drugs, causality analysis has been done for 100 ADR reports, and data has been entered into the WHO Uppsala Monitoring Centre database. ADR reporting at hospitals implementing PMI has increased from zero to an average of 30%.
 - Various ADR related print materials, reporting forms, guidelines, pharmacovigilance framework materials and ADR brochures were distributed to health facilities.
- Developed and distributed patient education materials on medicines use and the importance of adherence to treatment; developed a medicines dispensing and counseling job aid, accompanied by a checklist for service providers.
- Supported 200 model health facilities to use standard prescription forms.
- Supported health facilities both financially and technically in the disposal of expired ARVs and other drugs.

Pharmaceutical management information system

- Supported the generation, collection, and management of patient medication records at pharmacy level since the start of ART program in Ethiopia, enabled recording of data related to patient demographics, medicines dispensed, and rational medicines use; implemented SPS's Electronic Dispensing Tool at 165 sites, and manual medication registers and tools; seconded 173 data clerks at ART sites; For the first time in Ethiopia, patient pharmacy medication cards for ARVs were introduced at all ART facilities (over 500) making treatment/lost to follow-up data available for 200,000 patients on ARVs. The availability and use of treatment/medication register at PMI implementing health facilities has increased from zero to 89%.

- Distributed manual information system tools (e.g., ARV medicines dispensing register for adults; ARV medicines dispensing register for children; opportunistic infections medicines register; postexposure prophylaxis, emergency, expiry, and damage logbooks; ARV medicines prescription pads; patient tracking sheets; expiry date tracking sheets; patient information sheets; and reporting formats) to over 700 health facilities.
- Supported 171 ART sites with computer and provided Internet and telephone connections to 144 and 54 sites, respectively to enable them track persons who did not show for appointments For example, in one health center got a new telephone line in 2009. Since then more than 300 patients who had been lost for follow-up were tracked down, and 240 have reinitiated treatment—more than 78%.
- Collected, compiled, and shared national and regional patient uptakes and regimen reports with HIV/AIDS stakeholders. These reports serve as sole information sources for quantification by the responsible implementing partner; ART sites use the information to plan new patient enrollment; PFSA regularly uses the data to quantify, forecast, and procure ARVs and track patients lost to follow-up, resulting in improved treatment outcomes. The data analysis resulted in the government issuing supplementary guidelines to correct irrational ART prescribing practice.
- Conducted quarterly a continuous results monitoring system exercise for the malaria program, which tracked progress on availability/stock status, expiry, staffing, training, ADR, pharmaceutical management information system, infrastructure, dispensing, and testing and treatment indicators (graph below).



Facility improvement

- Renovated 156 health facilities (66 hospital pharmacies, 86 health center pharmacies and four stores for regional health bureaus and others); indications pharmacy staff retention rate at the supported facilities was higher by 7 percentage points.
- Provided ART facilities with furniture and equipment, such as store and dispensary shelves, lockable cabinets, and counseling/dispensing booths; store rearrangement activities resulted in sustainable changes stock expiry monitoring systems and facilities improved their storage conditions.
- Provided telephone lines to 144 health facilities and Internet to 54 facilities.

PMI/Antimalaria Drug Management (AMDM) Program

- Conducted baseline assessment of key drugs and management resources as well as knowledge on use. Assessment covered drugs and supplies for malaria, tuberculosis, HIV, and laboratory; organized workshop to present results; selected 66 health facilities for implementation; trained staff.
- Developed, printed, and distributed forms including transaction and reporting forms, bi-monthly monitoring checklists, and stock/bin cards to target health facilities; Target facilities showed an increase in updated bin cards from 34% to 87%.
- Supported a total of 149 facilities (24 hospitals, 90 health centers and 35 health posts through PMI/AMDM program.
- Procured and distributed store shelves (187), dispensing shelves (138), lockable cabinets (23), filling cabinets (29), tables (31), swivel chairs (18), guest chairs (62), and wooden pallets (313) to 12 hospitals, 44 health centers, and 29 woreda and zonal health offices. The percentage of PMI facilities that have their stores well organized increased from 40% to 71% and PMI facilities that have segregated and disposed expired/obsolete products increased from 63% to 84%.

Key Tools and Publications

Publications

- *Standard Operating Procedures for Antiretroviral Drug Management at Health Facilities 3rd Edition* (April 2008)
- *Standard Operating Procedures for Antiretroviral Drug Management at Health Facilities 3rd Edition* (March 2008)
- *Report on the Assessment of Health Care Providers; Knowledge Attitude and Practice on Adverse Drug Reaction (ADR) reporting and its monitoring* (August 2008)
- *Guidelines for Adverse Drug Reaction (ADR) Monitoring* (September, 2008)
- Micro-planning workshop report (preliminary baseline assessment report included). (January 2009)
- Report on training of trainers on pharmacovigilance in Ethiopia (June 2009)
- Ethiopia baseline assessment report. (June 2009)
- *Malaria Update – Reference For Pharmacy Professionals* (August 2009)

- Antimicrobial use, resistance, and containment baseline survey syntheses of findings. (August 2009)
- standard treatment guidelines for general hospital (January 2010)
- Pharmacy chapter, in *Ethiopian Hospital Reform Implementation Guideline*. (May 2010)
- *National Strategic Framework on the Monitoring of Drug Safety, Pharmacovigilance* (August 2011)
- *National Strategic Framework for Prevention and Containment of Antimicrobial Resistance* (August 2011)
- *Medicines Waste Management and Disposal Directive* (August 2011)
- *Adverse Drug Event Monitoring System, Pharmacovigilance Training Manual for Health Teaching Institutions: Participants Guide* (August 2011)
- SPS Statistical Bulletin: (Year 2009 – 2010)

Materials on medicines use

- *Medicines Dispensing Guide*
- *Medicines Use Counseling Guide*
- *Antimicrobial Medicines Use Guide for Patients*
- *Prescribing Guide*
- Proper use of medicines poster (In Amharic, Afan Oromo, and Tigregna)
- Pediatric antiretroviral medicines prescribing and dispensing aid
- *HIV AIDS Medicines, Side Effects Recognition and Management* (9 Different Regimens)
- Medicines allergy ID card

Drug formularies and drug lists

- 49 formularies for hospitals and health centers
- 43 drug lists for hospitals and health centers

Collaborating Organizations

- Regional health bureaus
- Federal Ministry of Health
- Pharmaceutical Fund and Supply Agency
- Food, Medicine, and Health Administration Control Authority
- Jimma University,
- Addis Ababa University
- Gondar University,
- Mekele University
- Ethiopian Pharmaceutical Association
- Ethiopian Druggist Association
- HIV/AIDS Prevention and Control Office
- JSI | DELIVER
- I-TECH (International Training and Education Center for Health)

- Johns Hopkins University
- FHI360
- HIV Care and Support Program
- International Center for AIDS Care and Treatment Program
- University of California San Diego
- University of Washington
- World Health Organization

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Benin
2008–2011
Funding: \$1,815,000

Background

In 2008, SPS was asked to help strengthen pharmaceutical systems in support Benin's scale-up of malaria commodities. After the first year, the USAID Mission in Benin announced a new strategy for providing malaria commodities to Benin's health system. President's Malaria Initiative (PMI)-purchased commodities had been channeled through the public sector system via the Central Medical Stores (CAME), but the new strategy has up to 90% of these products being transported directly to 15 USAID health zones following their arrival in country, with 10% of the products continuing to be distributed through the CAME. This parallel distribution system was intended to be temporary for one year, while SPS established a logistics management information system for malaria commodities (LMIS). The LMIS was launched in January 2011 and was maintained by SPS until the SPS/Benin office closed in April 2011.

Major Activities/Accomplishments

- Collaborated with the National Malaria Control Program (NMCP) to conceptualize and launch a logistics management information system for malaria commodities.
- Contributed to the design and creation of registers and forms to be used in the new LMIS, and distributed these to pharmaceutical health zone depots Helped build capacity at the NMCP in procurement planning by helping establish a quantification committee for malaria products, increasing NMCP staff ability use PipeLine procurement planning software, and helping the NMCP to update the database and generate procurement planning reports.
- Contributed to creating the conditions for improved CAME management by facilitating the clarification of the legal status of the CAME, updating its agreement with the government of Benin, and training its board of directors in good governance and central medical stores management.
- Assisted in CAME's transition to a new information system which should allow it to improve its decision-making and management.
- Provided technical assistance to revise the CAME articles of creation (constitution) through a consensus-based stakeholder process.
- Provided technical assistance to quantify Benin's needs in for malaria medicines and other commodities for September 2009 to December 2011.
- Led an exercise to review stock levels at all 34 of Benin's health zones in order to identify those in greatest need of malaria medicines and rapid diagnostics tests; worked with the NMCP to redistribute malaria medicines and rapid malaria test kits at the CAME that were in danger of expiry to health zones identified as having the greatest need.
- Carried out quarterly reporting on the availability of ACTs in Benin through the Procurement Planning and Monitoring and Report system for malaria coordinated by USAID Washington.
- Educated NMCP and National Department of Pharmaceutical Services on the End User Verification (EUV) survey to lay the groundwork for their participation; implemented two EUV surveys in Benin and provided recommendations to the NMCP on corrective measure to take to address imbalances in availability of malaria stocks among various health zones

- Reduced stock-outs of ACTs through the mechanism set up to monitor and follow up on malaria commodity stocks.
- Provided technical and financial support to the NMCP to conduct biannual workshops to collect logistics management data from all 34 health zones and to brief district medical coordinators and district pharmaceutical health depot managers on how to roll out the new LMIS for malaria commodities.
- Worked with the NMCP to follow on the implementation of this new LMIS found that only 14.7% of health facilities were reporting; visited one third of health zones in to determine reasons for underreporting, and made recommendations to the NMCP on measures to take to improve reporting rates.

Key Publications

- 2009. Ndoye et al. Évaluation de la gouvernance, de la transparence et des opérations de la Centrale d'Achats des Médicaments Essentiels du Bénin. Décembre 2008. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health. Cotonou, Benin, February 2009.
- 2009. Ndoye et al. Plan d'action issu de l'évaluation de la gouvernance, de la transparence et des opérations de la Centrale d'Achat des Médicaments Essentiels du Bénin, Décembre 2008. Cotonou, Benin, February 2009.
- 2009. Chenin, B. Rapport de mission. Renforcement des capacités du système d'information de la CAME: Phase 1. Cotonou, Benin du 25 mai au 5 juin 2009. Présenté à l'Agence des États-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
- 2010. Chenin, B. Rapport de mission du 27 mai au 10 juin 2010: Renforcement des capacités du système d'information de la CAME, Phase 2: Propositions d'organisation du système d'information de la CAME en vue de son paramétrage. Présenté à l'Agence des États-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
- 2010. Djidjoho, G., D. Degla, M. Gnintoungbe, R. Laly, A. Pio, C. Affoukou, A. S. Gueye, et C. Onyango. Rapport sur l'enquête pour la vérification de l'utilisation de produits de lutte contre le paludisme au Bénin (End User Verification), décembre 2009. Présenté à l'Agence des États-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
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- 2011. Rapport d'évaluation de la mise en œuvre du circuit transitoire de distribution des intrants de lutte contre le paludisme au Bénin. Présenté à l'Agence des États-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.

- 2011. Djidjoho G., Degla D., Gningtougbe, M., Onyango C., 2011. Establishing a logistics management information system for malaria commodities: the experience of Benin. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.

Collaborating Organizations

- Centrale d'Achat des Médicaments Essentiels et des Consommables Médicaux (CAME)
- Catholic Relief Services (CRS)
- Direction de la Pharmacie et des Médicaments (DPMED)
- National Malaria Control Program (NMCP)
- Projet Intégré de Santé Familiale (PISAF)
- Système National d'Information et de Gestion Sanitaire (SNIGS)
- Africare

Acknowledgements

SPS wishes to particularly acknowledge the National Malaria Control Program, CAME, DPMED, and the SNIGS team for the collaboration extended during implementation.

Burundi
2009 –2012
Funding: \$1,675,000

Background

According to Ministry of Public Health (MOPH) statistics in Burundi, malaria is responsible for up to 60% of all outpatient visits and up to 50% of deaths occurring in health facilities among children under five years of age. Ensuring prompt, effective, and safe artemisinin based combination therapy (ACT) treatment to a high proportion of patients with confirmed malaria in Burundi continues to be one of the greatest challenges for the *Programme National Intégré de Lutte Contre le Paludisme* (PNILP, National Malaria Control Program) given the weaknesses in the country's pharmaceutical management system, poor access to health services, and the lack of accurate laboratory diagnostic capabilities.

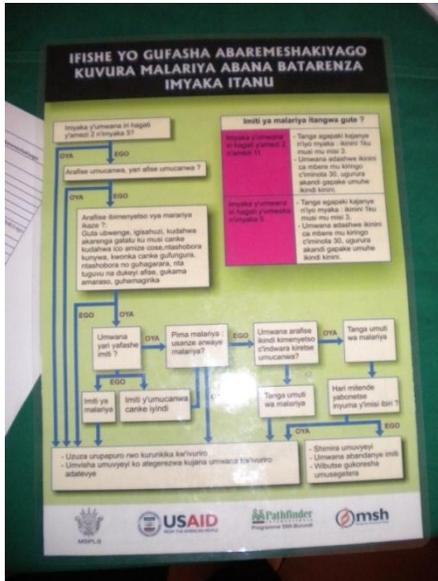
The SPS Program received funding to address pharmaceutical management challenges in malaria control in Burundi, build capacity of the PNILP, provide assistance to develop strategic and policy documents and their implementation, as well as play a coordination role for all USAID's short-term technical assistance in malaria.

Specific technical objectives include—

- Strengthening the capacity of the PNILP to develop and implement key policies and strategies for malaria control in Burundi
- Strengthening the capacity of PNILP, Centrale d'Achat des Médicaments Essentiels du Burundi (CAMEBU, National Essential Medical Store—) and Département de la Pharmacie, du Médicament et des Laboratoires (DPML, Directorate of Pharmacies, Medicines, and Laboratories) in the areas of malaria and pharmaceutical management
- Strengthening the capacity of PNILP in monitoring and evaluation (M&E)
- Supporting the PNILP to develop its organizational and functional capacity

Major Activities/Accomplishments

- Completed a literature review of the efficacy of sulfadoxine-pyrimethamine for intermittent preventive treatment for the prevention of malaria during pregnancy and conducted a workshop to disseminate the findings of the review.
- Facilitated a study tour to Ethiopia to observe the implementation of community case management (CCM) for malaria; worked with partners to develop an action plan for the CCM pilot study in Kayanza, Musinga, and Cibitoke.



Job aid for CHWs



Pharmaceutical management training for CHWs

- Developed tools for the management of ACTs and rapid diagnostic tests (RDTs), pharmaceutical management tools, supervision guides, as well as case management protocols and performance indicators for the pilot.
- Trained 22 healthcare providers to train others on CCM to conduct cascade trainings for 402 community health workers (CHWs); developed a job aid on good dispensing practices to improve counseling to mothers and improve adherence to ACT treatment. Currently, 392 CHWs are fully operational and provide treatment to children under five years.
- Helped the PNILP carry out a national level quantification of ACTs and RDTs. Since August 2011, the CAMEBU has not yet encountered stock-outs of any of the four ACT formulations.
- Implemented the End Use Verification tool in 2010, 2011, and 2012. Findings showed improvements; for example—
 - Treatment inconsistent with the country guidelines was reduced by 6% and 9% in 2010 and 2011 respectively.
 - ACT stock-outs at the facility level significantly decreased with the reduction of approval signatures from five to two, the use of the Channel software for inventory management, and the requisition process being reduced from 30 days to 2 days.
 - Concrete actions taken such as doubling the dosage of an age-group or redistributing over-stocked products to avoid stock-out and expiries.
- Conducted an assessment of the pharmaceutical management system for malaria products in 2010. As a result, SPS developed standard operating procedures for pharmaceutical management with input from stakeholders; conducted trainings for 132 store managers at district and facility levels and a training of trainers for 18 district supervisors in pharmaceutical management; drafted a facilitator’s guide.

- Carried out an assessment to evaluate the information management systems for data on antimalarial stocks and their ability to ensure appropriate and timely availability of data on ACT and quinine consumption. As a result, SPS trained 68 staff members at district provincial and national levels on the use of Channel; developed a harmonized supervision guide for district teams and a checklist for supervision customized for the needs of the PNILP; organized a training workshop for 90 managers to use data for decision making.
- Contributed to the development of the new malaria case management guidelines and trainings.
- Conducted a management and organizational sustainability tool (MOST) assessment. As a result, SPS helped PNILP with the revision of roles and responsibilities, job descriptions, and PNILP organogram.



Training of trainers in Bujumbura

Key Tools and Publications

- Shretta, R, and E. Maregeya. 2010. *Quantification of RDTs for Burundi*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Briggs, C. J., G. Buki, R. Shretta, D. Baza, and J. Kamyo. 2011. *Evaluation of the pharmaceutical management system for antimalarials in Burundi, April–May 2010*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Muhimpundu, M. 2011. *Facilitators guide for pharmaceutical management trainings*
- Mbatha, T, Degla, Dn and Maregeya, E. 2010. *Burundi: implementing the end use verification survey for the monitoring of ACT and malaria control activities using mobile phones technology*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- E. Maregeya, D. Ndayiragije, H. Mbanye. 2011. Evaluation de la disponibilité et de l'utilisation des intrants de lutte contre le paludisme (End User Verification survey). Présenté à l'Agence des États-Unis pour le Développement International par le Programme Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
- Shretta, R., and A. Kwiecien. 2010. *Intermittent preventive treatment with sulfadoxine-pyrimethamine in Burundi*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Akpane, E. 2011. *Management and Organization Sustainability Tool (MOST) report*.

Collaborating Organizations

- MOPH
- PNILP
- DPML
- CAMEBU
- EPISTAT
- ESD: Extending Service Delivery project
- Health districts

Acknowledgements

SPS is thankful to the generous support from USAID and close collaboration with MOPH partners (PNILP, DPML, PNSR, and CAMEBU) and other key stakeholders (WHO, European Union Amagara Meza project, and the Global Fund principal recipient) that contributed to the success of the program.

Dominican Republic
2007–2011
Funding: \$1,750,000

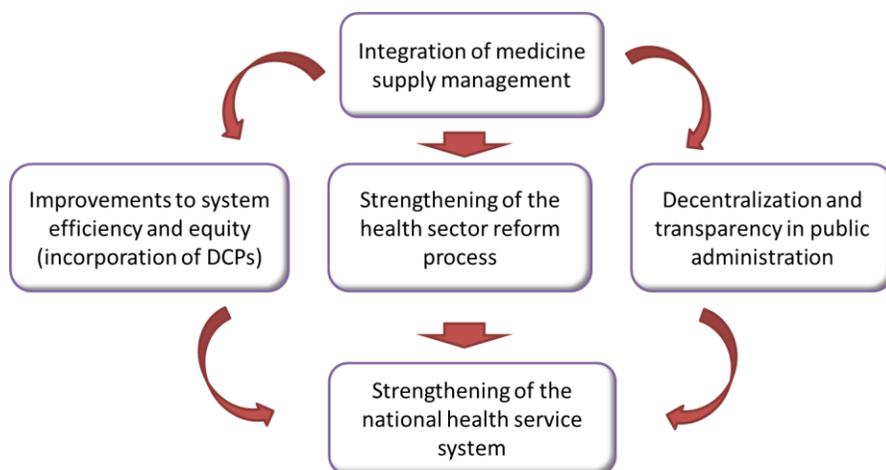
Background

About six years ago, the Dominican Republic's national tuberculosis (TB) program adopted the use of fixed-dose combination therapies and diagnostic kits procured through the Global Drug Facility. The TB program accomplished this with technical assistance the SPS Program. Resulting impact evaluation studies demonstrated increased availability of medicines and diagnostic materials and an approximate savings of USD 1 million per year. The HIV/AIDS program then requested assistance to support similar improvements of the supply management of antiretroviral and diagnostic commodities. SPS suggested a comprehensive approach to address all pharmaceutical management problems in the public sector. In 2010, the Ministry of Health (MoH) officially launched the national pharmaceutical management system (Sistema Único de Gestión de Medicamentos e Insumos [SUGEMI]) as the most efficient and sustainable strategy to improve the pharmaceutical management of TB, HIV/AIDS, and other MoH programs.

Major Activities/Accomplishments

- Developed standard operating procedures for all SUGEMI components.
- Trained personnel at central and regional levels through ad hoc workshops and a certified course on pharmaceutical management.
- Assessed the storage and transportation conditions of regional warehouses.
- Implemented a pharmaceutical management information system.
- Supported the more efficient use of financial resources to procure medicines and supplies based on the results of national programming exercises conducted in 2011 and 2012.
- Transferred medicines and supplies of two disease control programs (HIV/AIDS and TB) from provincial to regional services; put in place a single electronic formulary and procurement system for the requisition and dispatch of all medicines and supplies.
- Upgraded warehouse conditions and the transportation fleet based on an assessment that triggered the mobilization of USD 600,000 from national and international sources.

In addition, SUGEMI has been recognized by national authorities for its contribution to the health reform process, decentralization, transparency, and overall strengthening of the health services system.



Key Tools and Publications

- Valdez, C. and E. Barillas. 2009. Evaluación del Impacto de la introducción de combinaciones a dosis fija en el abandono del tratamiento de la Tuberculosis en la República Dominicana. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa Strengthening Pharmaceutical Systems (SPS). Arlington, VA: Management Sciences for Health.
- Valdez , Claudia y E. Barillas. 2008. Estudio de Línea Basal de la Situación de la Gestión de Suministro de Insumos de Laboratorio del PNCT en República Dominicana. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por el Programa SPS. Arlington, VA: Management Sciences for Health.
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- Barillas, E. and C. Valdez. 2008. *Análisis de la Gestión del Suministro de Medicamentos e Insumos de Salud del Sector Público en República Dominicana*. Incluido en: Barillas, Edgar. 2008. *Informe de Viaje a República Dominicana: Julio de 2008*. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health
- SPS (2011) Success Story: Technical Assistance for the Implementation of a National Medicine Supply System in Dominican Republic.
- SIAPS (2012). Success Story: Integrated Pharmaceutical Supply Management as a Strategy for Strengthening the National Health System in the Dominican Republic.
- *Manual para la Estimación y Programación de Insumos Sanitarios* (Manual for Estimating and Programming Health Supplies); *Expendio de Medicamentos e Insumos* (Dispensing of Medicines and Medical Supplies); *Distribución de Medicamentos e Insumos Sanitarios* (Distribution of Medicines and Health Supplies); *Sistema de Información Estratégica del Suministro de Medicamentos e Insumos* (Strategic Information System for Medicines and Medical Commodities Supply); *Sistema de Información de Medicamentos e Insumos Sanitarios* (Information System for Medicines and Medical Supplies); *Manual de*

Procedimientos Operativos de Almacén (Manual of Warehouse Operating Procedures); *Programación de Medicamentos e Insumos Sanitarios* (Programming of Medicines and Health Supplies).

- SPS (2011) Policy Brief: Planning the purchase of medicines and medical supplies for the Ministry of Health for 2012, and its implications for improving the supply in the Dominican Republic
- Noguera, Monica. 2012. *Propuesta de licitación pública de precios para la compra descentralizada en el Ministerio de Salud Pública de República Dominicana*. Presentado a la Agencia de los Estados Unidos para el Desarrollo Internacional por Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- SPS (2011). Success story: Mobilization of resources for improving the storage and transport of medicines and medical supplies in Dominican Republic.
- Espinoza, H., L. Aurich, and A. Guerrero. 2010. *Formulación de un plan de mejoramiento de las condiciones y prácticas de almacenamiento de medicamentos e insumos de los Servicios Regionales de Salud 0, 6 y 8 de República Dominicana*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Espinoza, H., A. Mendoza, L. Aurich, and A Guerrero. 2011. *Formulación de un plan de mejoramiento de las condiciones y prácticas de almacenamiento de medicamentos e insumos de los Servicios Regionales de Salud 1, 2, 3, 4, 5, y 7 de República Dominicana*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Morera, Domingo. 2011. *Informe Técnico: Diagnóstico para la Organización de la Red de Distribución del Sistema Único de Gestión de Medicamentos e Insumos (SUGEMI)*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- SPS (2011). Success story: Strategic Pharmaceutical Management Information System for TB in the Dominican Republic.



Collaborating Organizations

- Unidad Nacional de Gestión de Medicamentos (MoH Pharmaceutical Unit)
- Santo Domingo Autonomous University
- Local representation of the Pan American Health Organization

Mali

2008–2012

Funding: \$2,990,175

Background

From 2008 to 2011, SPS received funds from the United States Agency for International Development to implement activities to strengthen the pharmaceutical sector at various levels in support of Mali's Health and Development Program with the goal of ensuring the availability and accessibility of quality medicines. SPS also contributed to the US Foreign Assistance Investing in People program through its malaria sub element.

The SPS implementation strategy for Mali was to build on existing systems and structures, transfer capacity to local counterparts, and balance short- and long-term priority pharmaceutical system interventions. Specifically, the technical objectives were to—

- Improve governance in the pharmaceutical sector
- Strengthen pharmaceutical management systems to support public health services
- Contain the emergence and spread of antimicrobial resistance

Major Activities/Accomplishments

- Assisted in the revision of the 1999 National Pharmaceutical Policy and the development of its implementation plan.
- Helped revise the 1995 Schéma Directeur d'Approvisionnement et de Distribution des Médicaments Essentiels, Mali's key document guiding the functioning of the pharmaceutical sector.
- Provided technical assistance to the National Malaria Control Program (NMCP) to review its strategic plan for 2006–2011.
- Facilitated two workshops on leadership and governance for the Ministry of Health's National Contraceptive Security Committee as part of a larger set of activities to reactivate this committee and create a reproductive health commodity security plan.
- Evaluated the Pharmacie Populaire du Mali's (PPM) storage capacity needs and made recommendations on how much space and which equipment the PPMR needed to manage projected commodity flow.
- Installed procurement planning software at the Directorate of Pharmacy and Medicines (DPM) and at the NMCP, and trained relevant staff in its use.
- Conducted exercises to forecast needs in contraceptives, oxytocin, and malaria commodities.
- Used data obtained from SPS's end use verification study to prevent or mitigate stock-outs through changing distribution plans, strengthening the logistics management information system, and supporting the creation of regional committees on pharmaceutical issues.
- Prepared and submitted 24 procurement planning and monitoring reports for malaria and contraceptives.
- Conducted a situational analysis of the supply chain for distribution of artemisinin-based combination therapy and rapid diagnostic test kits and an assessment of pharmaceutical system.
- Trained 595 staff members in pharmaceutical management at national, regional, district, and health center levels across all the country.

- Assisted the DPM in updating indicators to be used during supervision visits of pharmaceutical warehouses and pharmacies and supported 151 supervision visits across all regions.
- Conducted two data quality audits in an area covering 50% of health districts to inform planning of interventions to improve the quality and quantity of pharmaceutical management data reported from peripheral to central level.
- Procured priority equipment (forklift, cold rooms) for the PPM's national warehouse and regional depots.



SPS staff with persons trained in pharmaceutical management in July 2010 in the region of Kayes

Key Tools and Publications

- Training tools for Pipeline 5 software
- Diallo Y., Diallo F.H. ; Diarra M., Sangaré A. *Rapport sur la Disponibilité de l'ocytocine dans 75 structures sanitaires au Mali, 2011*. Arlington, VA: Management Sciences for Health.
- Traoré B.T., Nfor E. and al, *Disponibilité et gestion des médicaments d'urgence obstétricale dans les structures de santé au Mali: Octobre, 2009*. Arlington, VA: Management Sciences for Health.
- Diallo F.H., Vreeke E. *Evaluation des procédures de Gestion pharmaceutique de la pharmacie populaire du Mali, Août 2009*. Arlington, VA: Management Sciences for Health.
- Diallo, F.H., Daniel, G., Eghan, K., & Shriber, J. (2011) *Rapid Assessment of the NTD Pharmaceutical Management and Supply Chain in Mali: Technical Report*. Arlington, VA: Management Sciences for Health.
- E. Vreeke, E., et D. Bagayoko. 2010. *Approche stratégique pour améliorer le système d'information pharmaceutique au Mali*. Arlington, VA: Management Sciences for Health.
- Doumbia O ; Sangho F., Diallo A, Diallo F.H., Maiga M. *Politique Pharmaceutique Nationale : Rapport d'Analyse de la situation, août 2009*
- Diallo, F.H, Diarra M., Touré D.M. 2011. *Rapport d'élaboration des tableaux d'acquisition des contraceptifs du Mali, mars 2011*. Arlington, VA: Management Sciences for Health.

- Diallo, F. H., Vreeke E.A. T. Maiga. 2009. *Analyse de la situation de base de l'approvisionnement en médicaments antipaludiques et tests de diagnostic rapide au Mali 2009*. Arlington, VA: Management Sciences for Health.
- Vreeke, E., F.H Diallo 2010. *Le système de suivi et de distribution des moustiquaires imprégnées d'insecticide au Mali*. Arlington, VA: Management Sciences for Health.
- Bagayoko D. et al. *Rapport de suivi des contraceptifs avant campagne PF, 2010*. Arlington, VA: Management Sciences for Health.
- Bagayoko D. et al. *Suivi de la Disponibilité des Médicaments antipaludiques dans 38 DRC et 64 DV au Mali, 2010*. Arlington, VA: Management Sciences for Health.

Collaborating Organizations

- Directorate of Pharmacy and Medicines (DPM)
- Directorate of Health (DNS)
- Programme National de Lutte contre le Paludisme (PNLP)
- Division de la Santé Reproductive (DSR)
- Pharmacie Populaire du Mali (PPM)
- Comité Sectorielle de Lutte contre le SIDA
- Direction Régionale de la Santé
- USAID/Mali
- Assistance Technique Nationale plus (ATN plus)
- Projet Keneya Ciwara II (PKCII)
- Save the Children
- Maternal and Child Health Integrated Project (MCHIP)
- Measure Evaluation
- World Health Organization
- United Nations Children's Fund
- United Nations Population Fund

Acknowledgements

We acknowledge and thank the Malian Ministry of Health through the DPM, DNS, PNL, PPM, and various national, regional, and local government agencies and health care facilities that were partners in our SPS activities.

Europe and Eurasia

2008–2011

Funding: \$616,601

Background

SPS carried out activities in Armenia, Azerbaijan, Georgia, Uzbekistan, and Ukraine to implement e-TB Manager, thereby strengthening their national tuberculosis programs by improving TB case and commodity management and better reporting. e-TB Manager is an electronic web-based TB information system that supports databases and information flows into one comprehensive management tool. SPS conducted a regional workshop on e-TB Manager in Tbilisi in November 2008 to familiarize target countries with the tool, its potential role in strengthening country TB programs, implementation steps, and required resources. The workshop was followed by a series of SPS planning and technical trips to countries, remote development of country-specific versions of e-TB Manager, and user training.

Major Activities/Accomplishments

- Organized a working group in Ukraine that developed requirements to customize e-TB Manager, and based on those requirements, adapted e-TB Manager to the country needs. e-TB manager was approved as a national management information system in Ukraine.
- Customized e-TB Manager and implemented it in TB facilities of Tashkent (city), Uzbekistan and Tashkent Oblast (region). The new National TB Control Program of Uzbekistan (2011–2015) included implementation of e-TB Manager, and the government and Global Fund are contributing to information technology infrastructure development to support it.
- Developed and tested a laboratory module for e-TB Manager in Uzbekistan. which was integrated into the existing version of the system.
- Customized e-TB Manager to meet the requirements of Azerbaijan’s national TB program; collaborated with Abt Associates on implementation of e-TB manager and integrating it with the infectious diseases surveillance system.
- Customized e-TB Manager for Armenia. It is being piloted in selected TB facilities
- Provided technical leadership to WHO/EURO through participation in the meetings of the TB Training and Educational Collaborative and WHO/EURO Technical Advisory Group.

Key Tools and Publications

- “Follow-up on implementation of e-TB Manager at the Regional and Country Level.” Presentation at the 21st meeting of TB Training and Educational Collaborative for WHO European Region. The Hague, the Netherlands, 2010.
- “Improving TB information management: Eastern Europe experience.” Presentation at the 42nd Conference on Lung Health of the International Union against Tuberculosis and Lung Diseases. Berlin, Germany, 2010.
- “Countries of Eastern Europe and Central Asia: Partnership Frameworks to Improve TB Information Systems.” Presentation at the 43rd Conference on Lung Health of the International Union against Tuberculosis and Lung Diseases. Lille, France, 2011.

- “Countries of Eastern Europe and Central Asia: Partnership Frameworks to Improve TB Information Systems.” Presentation at the 44rd Conference on Lung Health of the International Union against Tuberculosis and Lung Diseases. Kuala Lumpur, Malaysia, 2012.
- “An Electronic System for the Management of Laboratory Data on Tuberculosis Diagnosis and Treatment.” Presentation at the 44rd Conference on Lung Health of the International Union against Tuberculosis and Lung Diseases. Kuala Lumpur, Malaysia, 2012.
- “Overview of the Human Capacity Development Activities in Eastern Europe and Central Asia.” Presentation at the 23rd meeting of TB Training and Educational Collaborative for WHO European Region. Copenhagen, Denmark, 2012.

Collaborating Organizations

- National TB Center, Ukraine
- Ministry of Health of Azerbaijan
- Ministry of Justice of Azerbaijan
- Republican DOTS Center, Uzbekistan
- Global Fund TB projects in Uzbekistan
- National Tuberculosis Program, Armenia
- World Health Organization
- World Health Organization /Regional Office for Europe
- PATH
- Abt Associates
- Project Hope

Ghana
2008–2010
Funding: \$900,000

Background

In early 2007, a President's Malaria Initiative (PMI) team conducted a needs assessment to identify areas of PMI support within the context of Ghana's national malaria policy and a strategic plan that would complement Roll Back Malaria partner interventions. The assessment identified critical issues related to the management and use of antimalarials and insecticide-treated nets (ITNs) that need to be addressed to reach national, donor, and international targets. These issues included medicine quantification and procurement planning, warehousing, training in pharmaceutical management at all levels of the distribution system, inventory control and information management, training in malaria case management (pre-service and in-service), artemisinin-based combination therapy (ACT) management and use in the private sector (chemical sellers, pharmacies and private clinics), and pharmaceutical quality assurance. In 2008, SPS was asked to help strengthen pharmaceutical management system capacity, including developing a comprehensive pharmaceutical management information system and providing supervision, forecasting, and warehousing support at regional and district levels.

Major Activities/Accomplishments

- Supported the finalization, adoption, and implementation of new amendments in the Malaria Treatment Policy—
 - Revised and updated the malaria treatment policy in collaboration with the Ministry of Health (MoH)/National Malaria Control Program (NMCP) to include new medicines and recommendations based on evidence of chloroquine resistance.
 - Supported the development and finalization of the malaria component of the standard treatment guidelines in collaboration with the Ghana National Drug Program; helped disseminate over 250 copies of the standard treatment guidelines to health facilities
 - Collaborated with the Ghana Sustainable Change Project to review and update the licensed chemical seller operations handbook.
 - Developed the *Malaria Case Management in Ghana: Training Manual for LCS*; supported the formatting and printing of 2000 copies to distribute to licensed chemical sellers.
 - Developed *Malaria Case Management in Ghana: Training Manual for Pharmacists* to educate pharmacists on the new malaria policy recommendations; supported the formatting and printing of 1000 copies to distribute in the private and public sectors. The Pharmaceutical Society of Ghana used this manual when it rolled out its nationwide training program for pharmacists.
- Conducted a rapid assessment of antimalarial prescribing and dispensing practices in the private and public sectors.
- Updated curriculum and developed continuing education training on rational prescribing and dispensing of antimalarials for pharmacists and licensed chemical sellers.
- Provided technical support to the Ghana Food and Drugs Board to develop and enforce legal requirements to phase out antimalarial monotherapies.

- Trained 155 Drug and Therapeutics Committee (DTC) members from 48 public and private health facilities on rational medicine use concepts and supported DTCs to strengthen the implementation of new antimalarial and essential medicines policies.
- Provided supportive supervision at 20 health facilities that received the DTC training to ensure the rational use of ACTs and other antimalarials.
- Conducted baseline and post-intervention supervisory visits to measure the effectiveness of the DTC intervention package in two facilities; survey findings showed that the interventions constituted an effective approach that improves rational medicine use in health facilities.
- Assessed the capacity of Ghana's regional medical store to warehouse and store ACTs and other antimalarials; findings showed that all seven antimalarials on the tracer list were stocked out at the regional stores at various times during 2008.
- Supported the NMCP to design the distribution model for ACTs to identify private providers to increase the uptake of ACTs in the country.
- Assisted the NMCP in developing of a monitoring and evaluation framework for private sector ACT distribution.
- Supported stakeholders to assess the national pharmacovigilance and medication safety system and provided recommendations for improving the safety of health products in Ghana.

Key Tools and Publications

- *Ghana: PMI assessment of supply chain and pharmaceutical management for antimalarials and ITNs*. 2008. Prepared by the Strengthening Pharmaceutical Systems (SPS) Program and USAID | Deliver project, task order 3.
- *Malaria case management in Ghana: Training manual for pharmacists*. 2009. Prepared by Ghana Health Service, WHO, USAID's PMI-funded SPS program.
- *Malaria case management in Ghana: Training manual for licensed chemical sellers*. 2009. Prepared by Ghana Health Service, WHO, USAID's PMI-funded SPS program.
- *Distribution of ACTs in the Private Sector of Ghana: Monitoring and Evaluation Strategy and framework*. 2010. USAID's PMI-funded SPS program.
- *Pharmacovigilance in Ghana: A systems analysis*. 2010. USAID's PMI-funded SPS program.
- *Assessment of malaria pharmaceutical management system in Ghana*. 2009. USAID's PMI-funded SPS program.
- *Report on monitoring and technical support visits to drug and therapeutic committees in the Greater Accra, Central, and Western Regions of Ghana: May – September 2010*. 2010. USAID's PMI-funded SPS program.
- *Assessment of the rational use of medicines at the drug and therapeutic committees in the Greater Accra region: impact of training and mentoring visits for Maamobi and Kaneshie Polyclinics*. 2010. USAID's PMI-funded SPS program.
- "Impact of training, monitoring, and mentoring on drug and therapeutic committees in Ghana." Presented at the Third International Conference for Improving use of Medicines. Antalya, Turkey 2011. (oral)

Collaborating Organizations

- Expanded Program Immunization
- Food and Drug Board
- Ghana Health Services
- Ghana Social Marketing Foundation
- Global Fund Country Coordinating Mechanism Ministry of Health
- National AIDS Control Program
- National Malaria Control Program
- Pharmacy Council
- Pharmaceutical Society of Ghana
- Promoting Malaria Prevention and Treatment project
- Regional Directorate of Health Services for Greater Accra, Western, and Central regions
- USAID | DELIVER
- World Health Organization

Acknowledgements

We would like to acknowledge and thank the National Malaria Program in Ghana, Ghana Health Services, Pharmaceutical Society of Ghana, and other national agencies who were our partners during the implementation of PMI activities in Ghana. We would also like to thank the staff from all the health facilities and medical stores visited during the course of program implementation. And finally, we thank our PMI partners for a successful collaboration to strengthen Ghana's malaria pharmaceutical system.

Guatemala
2008–2011
Funding: \$425,000

Background

Infection prevention and control is a fundamental intervention to prevent the emergence and spread of antimicrobial resistance in hospitals and health facilities. Responding to this, the RPM Plus Program developed a self-assessment Infection Control Assessment Tool (ICAT) that uses quality improvement methods to identify and improve infection control problems in hospital settings.

SPS presented this tool to the Ministry of Health Vice Ministry of Hospitals in Guatemala who saw it as a way to improve quality of care in the hospital network as well as to reduce hospital-acquired infections. After a pilot in five hospitals, the Ministry of Health decided to expand the approach to the whole hospital network with technical and financial support from SPS.

SPS's overall technical objective was to improve infection prevention and control practices in the national hospital network and in five CAIMIs (Centro de atención integral materno-infantil), which are health centers attending deliveries. Specific technical objectives were to—

- Strengthen the technical capacity of the infection control committees
- Improve waste management practices
- Improve hand hygiene practices

Major Activities/Accomplishments

- Adapted of the ICAT to the Guatemala hospital context and trained 171 people from the 43 hospitals in its use.
- Used the ICAT modules to evaluate hospitals annually for three years.
- Conducted a baseline evaluation in 2009; followed-up with evaluations over the next two years, which showed an upward trend in the results despite the limitations in the hospital budgets.
- Visited 11 hospitals and introduced set of indicators for the hospitals to monitor.
- Donated 60 gel dispensers to one hospital to highlight the importance of hand washing. The gel dispensers were refilled by a product produced in the hospital. The percentage of staff using correct hand hygiene practices increased from 20% in February 2011 to 60% in July 2011 and this level was maintained a year later; an associated reduction in prevalence of nosocomial infections was noted (purple line), accompanied by a slight reduction in the lethality of nosocomial infections (Figure 1).

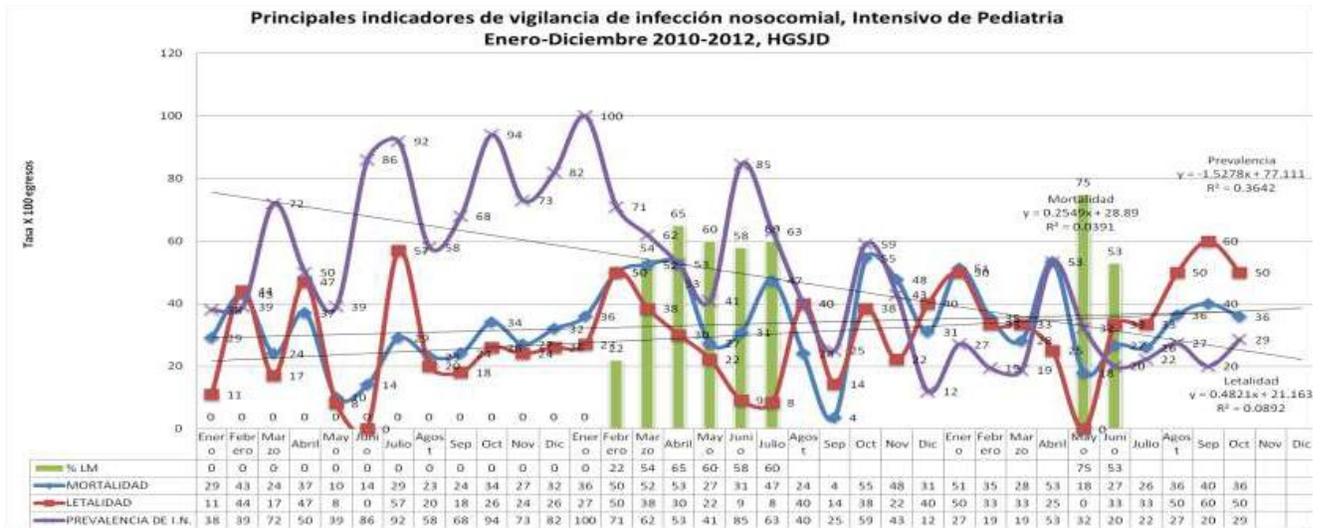
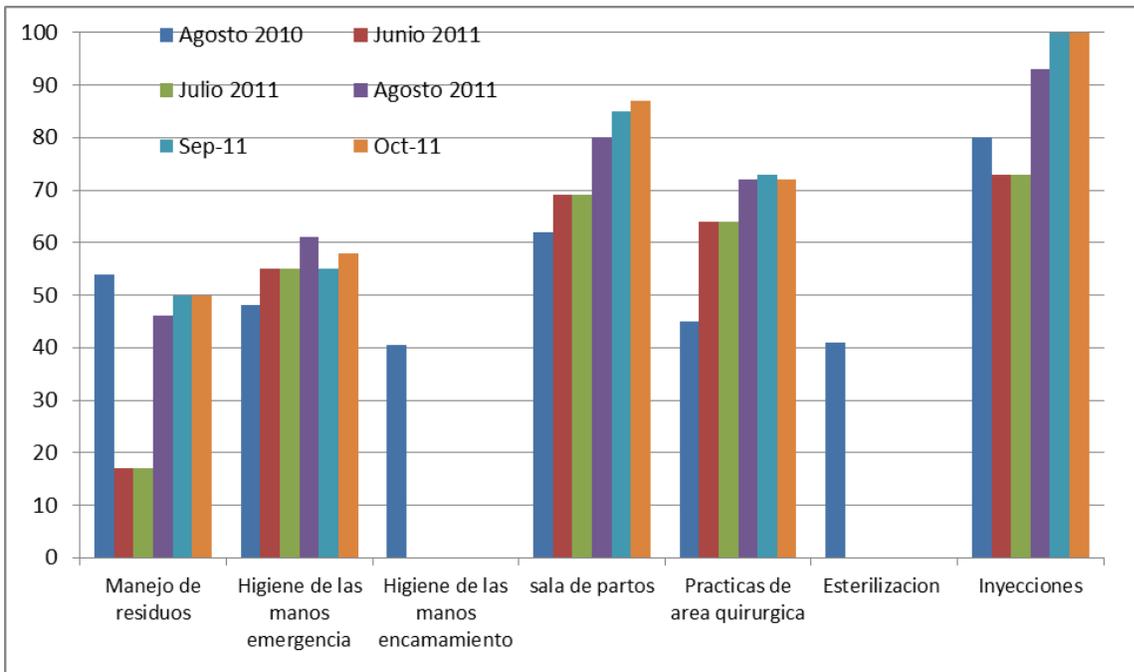


Figure 1: Infection control data from pediatric intensive care

- Helped the Ministry of Health adapt the hospital ICAT to secondary-level health facilities trained 226 people from 5 CAIMIs and regional health staff to provide follow-up to the facilities.
- Conducted supervision visits to five CAIMIs in the year after the training; only two of the five CAIMIs were monitoring and evaluating their progress with a functional infection control team. Data from the CAIMI in Cuilco showed improvement in the infection prevention practices as measured by application of the modules over one year.



- Provided technical assistance to a central level team to evaluate infection control practices in health centers in a region that had experienced an outbreak of nosocomial infections; applied

five ICAT modules in eight health centers; generated recommendations to improve infection prevention practices; finalized the tool, which was approved by the Minister of Health.

- Printed and distributed 550 copies of the secondary-level ICAT at five orientation sessions for regional health teams; oriented 86 staff members in the use of the tool and quality improvement.
- Distributed 20,400 posters to all facilities through workshops and supervisory visits.
- Helped produce a surveillance protocol for nosocomial infections to be applied in hospital settings; assisted also in the development of a guide to prevent and control infections for hospitals; disseminated these documents to staff from the network of hospitals in a workshop in Guatemala City.

Key Tools and Publications

Hospitals

- Hospital ICAT, Guatemala
- Training reports and materials
- Improvement and supervision plans
- Protocol for surveillance of nosocomial infections
- Guide to prevent and control nosocomial infections

Secondary -level facilities

- ICAT for secondary level facilities
- Training reports and materials
- Improvement and supervision plans
- Evaluation of health centers in Santa Rosa

Collaborating Organizations

- Vice Ministry of Hospitals, Ministry of Health, Guatemala
- SIAS (Sistema Integral de Atención en Salud) of the Ministry of Health
- URC HCI Project
- Capacity project

Acknowledgements

The success of this work is due to the motivation and dedication of key people in the Ministry of Health: Dr. Manuel De Leon in the Vice Ministry of Hospitals and in the SIAS: Elvita Dubon, Department of Developing Health Services; Luis Castellanos and Karen Castillo, Unit of Supervision, Monitoring and Evaluation; Carmina Reynosa, Department of Nursing. The SPS local consultant Rachel de Morales was unfaltering in her hard work and drive.

**India, State of Karnataka
2009–2012
Funding: \$400,000**

Background

Karnataka, with a population of 61 million, is among the states with the highest HIV prevalence. Expanding access to antiretroviral therapy (ART) is a priority for the Karnataka State AIDS Prevention Society (KSAPS). The SPS Program began working in December 2009 in collaboration with the USAID-funded Samastha project to assist KSAPS and other local partners to address pharmaceutical management issues related to the management of antiretroviral medicines and other ART-related pharmaceuticals. In agreement with KSAPS, USAID/India, and partners SPS focused its activities in the first year on supporting the scale-up of the ART program in Karnataka through strengthening the capacity of pharmacists to appropriately manage medicines to avoid stock-outs and expiries and to enhance the appropriate use of antiretroviral medicines. In addition to continuing support KSAPS and partners to build capacity and implement performance monitoring activities at ART pharmacies, from October 2010 to March 2012, SPS assisted KSAPS to identify and initiate strategies for strengthening ART program pharmacovigilance in the State of Karnataka.

The SPS technical objectives were to—

- Strengthen capacity of in-country stakeholders to adequately manage ART-related medicines and commodities and to promote their rational use
- Increase the capacity of in-country stakeholders to strengthen pharmacovigilance systems

Major Activities/Accomplishments

- Assisted KSAPS to develop a baseline data collection tool on ART pharmaceutical management practices and to analyze the data collected at 37 ART centers using self-reporting and facility visits.
- Worked with KSAPS, the Samastha project, and other local partners to adapt SPS's generic HIV/AIDS pharmaceutical management training materials for the local context.
- Conducted a training-of-trainers on HIV/AIDS pharmaceutical management for a pool of 14 trainers from KSAPS, Samastha project, medical and pharmacy schools, and ART centers.
- Supported the new trainers to conduct the first HIV/AIDS pharmaceutical management training session in India at two workshops in April and August 2010. The workshops were attended by 33 of the 34 pharmacists stationed at ART centers in the State. SPS used the baseline data on ART pharmaceutical management practices to develop and present a module on performance improvement as part of the training course to support the state-wide roll out of KSAPS's continuous quality improvement initiative in ART centers.



HIV/AIDS Training Workshop, Bangalore State of Karnataka, April 2010

- Assisted KSAPS and partners to develop an ART pharmaceutical management monitoring checklist for supervisors to oversee the ART centers; prepared tools for routinely generating key indicators from the completed checklists to enable KSAPS to track changes in managing medicines and adhering to good practices.
- Worked with the Samastha project to develop a curriculum for training pharmacists that dispense cotrimoxazole prophylaxis therapy in Karnataka State.
- Assisted KSAPS and the Samastha project to identify options for enhancing the functionality of the logistics management information system software developed by Samastha to support Karnataka's ART centers' inventory management reporting to India's National AIDS Control Organization and KSAPS.
- Conducted a rapid situational analysis of Karnataka's ART program's medicines safety system to benchmark performance and identify strengths, gaps, and potential strategies for strengthening pharmacovigilance activities.
- Developed and presented to stakeholders a protocol and operational plan for incorporating into the ART program active safety surveillance and longitudinal monitoring of patients taking antiretrovirals.



SPS/KSAPS stakeholder workshop: July 15, 2011

Key Tools and Publications

- *HIV/AIDS Pharmaceutical Management Capacity Building in Karnataka, India. Baseline Assessment: April and August 2010*
- HIV/AIDS pharmaceutical management training materials
- Training materials on cotrimoxazole prophylaxis for pharmacists from peripheral health units
- Supervisory checklist for monitoring at the ART center pharmacy (draft for field testing)
- Tool for calculating pharmacy indicators for ART center pharmacies for each reporting period
- Tool for tracking the trends of pharmacy indicators for ART center pharmacies
- *Pharmacovigilance in the State of Karnataka, India: Rapid Systems Analysis and Design of Active Surveillance Activities for the Antiretroviral Program*
- *Development of Active Surveillance System for the Antiretroviral Program in Karnataka State—Protocol and Operation Plan*

Collaborating Organizations

- Karnataka State AIDS Prevention Society
- National AIDS Control Organization
- Samastha project implementers—
 - Karnataka Health Promotion Trust
 - EngenderHealth
 - Population Services International
 - Kempe Gowda Institute of Medical Sciences

Acknowledgements

In addition to KSAPS, Karnataka Health Promotion Trust, and the other collaborating organizations mentioned above, we would like to thank and acknowledge the contributions of Dr. Y.K. Gupta, Professor and Head, Department of Pharmacology, All India Institute of Medical Sciences, and the WHO Country Officer to the useful discussions on the active surveillance activity and Dr. Gurumurthy Parthasarathi, JSS College of Pharmacy and JSS Medical College Hospital, Mysore, for facilitating the rapid pharmacovigilance systems analysis and contributing to the development of the active surveillance operational plan. Special gratitude is offered to the staff of the ART centers in Karnataka State.

Lesotho
2008–2012
Funding: \$2,299,983

Background

The SPS Program in Lesotho began activities in 2008 with the general aim of supporting the Lesotho government's Health and Social Welfare Strategic Plan 2004–2011. The focus of the program was to build capacity in managing all aspects of the pharmaceutical system including initiatives focused on HIV & AIDS prevention, treatment, and care.

The specific technical objectives of SPS in Lesotho were to—

- Improve governance in the pharmaceutical sector
- Contain the spread of antimicrobial resistance
- Expand access to essential medicines
- Strengthen pharmaceutical systems to support public health services

Major Activities/Accomplishments

- Conducted a baseline assessment for pharmaceutical and laboratory commodities in Lesotho
- Conducted a laboratory commodities management assessment that informed the development of the laboratory logistics management information system.
- Conducted a health systems assessment to establish a baseline for health systems strengthening, focusing on the World Health Organization health systems building blocks, including pharmaceutical and service delivery.
- Conducted a cost analysis of the National Drug Service Organization (NDSO) to determine the national level financing needs for warehousing and distribution, including appropriate mark-ups for donated products.
- Conducted an antibiotic utilization patterns survey at six hospitals and proposed interventions to improve patient care.
- Provided technical assistance for the review of national standard treatment guidelines and essential medicines list. Drafts for improvement of prescribing policies and practices in place.
- Procured a Minilab® for NDSO and carried out a five-day training on drug quality assurance and procedures for staff from NDSO, National University of Lesotho, and the National Health Training College.
- Provided technical assistance in developing the Medicines Bill, which will establish a medicines regulatory agency, including organizing stakeholder consultations.
- Capacitated over 900 health care workers on inventory and supply chain management through general drug supply management in-service training.
- Capacitated over 1000 nursing and pharmacy students in supply chain management through pre-service training in drug supply management for strengthening antiretroviral treatment (ART) services.
- Helped develop a proposal to establish a medicines information and pharmacovigilance center that has since been adopted by the Ministry of Health.

- Capacitated National University of Lesotho staff on pharmacovigilance and patient safety
- Provided technical assistance to establishment of Pharmacy and Therapeutics Committees and conducted training for hospital staff.
- Conducted a medicines access survey, allowing the Pharmaceuticals Directorate to track key supply chain indicators and identify key challenges in providing pharmaceutical services.
- Helped conduct a rapid national assessment of data quality; established data management practices and gaps within the national ART program and provided recommendations to improve data management.
- Conducted monitoring and evaluation training for strengthening the ART program.
- Trained health care workers in RxSolution, an MSH-developed electronic inventory and patient management tool.



Ms. Macarena Garcia (USAID Country Director), Dr. Charles Ajayi (USAID SPS Activity Manager), NDSO General Manager, and the rest of the guests are given a demonstration of how the Minilab works by the NDSO quality assurance manager, one of the trainees from the Minilab Training of Trainers Workshop.



“All RxSolution needs is for you to understand how it works, use it and it will work for you for your ART clinical management solutions,” Mr. Sello Lechesa, a pharmacy technician and RxSolution user in the ART pharmacy at Maluti Adventist Hospital

Key Tools and Publications

Assessment/study reports

- *Baseline Assessment for Pharmaceutical and Laboratory Commodities in Lesotho*
- *Laboratory Commodities Management Assessment*
- *Cost Analysis of the National Drug Service Organization in Lesotho - Toward Establishing Optimum Handling Fees*
- Health systems assessment
- Medicines access survey
- *Antibiotic Utilization Patterns Survey at Six Hospitals*

Manuals/guides

- Supportive Supervision and Mentoring Manual (not yet adopted by the Ministry of Health)
- *Procedure Manual For Laboratory Commodity Management in the Kingdom of Lesotho*
- *Laboratory Commodity Management in the Kingdom of Lesotho – Trainers’ Guide*
- Antiretroviral therapy (ART) patient education pamphlets

Collaborating Organizations

- Ministry of Health and Social Welfare
- National Drug Service Organization
- Christian Health Association of Lesotho
- National Health Training College
- National University of Lesotho

Acknowledgements

We would like to acknowledge and thank the various government agencies and health care facilities that were partners in our activities in addition to collaborating organizations that may not have been mentioned above.

Liberia
2007–2012
Funding: \$1,530,000

Background

In 2008, SPS collaborated with the USAID | DELIVER Project to conduct an assessment of the pharmaceutical supply management system in Liberia. Major gaps identified included a lack of skills and capacity to accurately order, receive, dispense, and quantify medicines, including antimalarials and related commodities. In addition, access to artemisinin-based combination therapies (ACTs) was very limited, and all the key policy documents were outdated. From 2007 to 2012, the SPS Program helped strengthen the pharmaceutical management system in Liberia with funding support from USAID PMI.

Technical objectives included—

- Building capacity and enhancing the skills of Ministry of Health and Social Welfare (MOHSW), National Malaria Control Program (NMCP), the National Drug Service (NDS), and their key partners to ensure an uninterrupted supply of ACTs and related commodities
- Increase access to ACTs through the private sector
- Improve rational use of medicines

Major Activities/Accomplishments

Strengthened supply chain for malaria commodities management

- Built capacity of the MOHSW, NDS, NMCP and other relevant partners including UNICEF, Africare, and Firestone staff on quantification of malaria commodities in collaboration with USAID/DELIVER.
- Reviewed the 2008–2013 draft strategic plans for malaria commodities quantification with special attention to the treatment protocol, data sources, and assumptions used in projecting needs.
- Supported the revision of the logistics management information system, focusing on the tools, technical features, processes, and data.
- Implemented monitoring and supervision systems for malaria commodities and the End Use Verification survey.

Enhanced MOHSW capacity on pharmaceutical management

- Conducted the first capacity-building activity on pharmaceutical supply management since Liberia emerged from civil war. The training-of-trainers targeted 27 public health pharmacists from the MOHSW, counties, health programs, and hospitals, which is close to 70% of all the pharmacists in the country.

- Trained more than 400 service delivery point dispensers from all counties on pharmaceutical supply management.
- Developed job aids for county pharmacists.

Helped revise pharmacy school curriculum

- Collaborated with the school of Pharmacy at the University of Liberia and academic members from the West Africa Regional Technical Resource Collaboration for Pharmaceutical Management to review and revise the school's curriculum.

Provided support to MOHSW to increase access to ACTs through private sector

- Developed a concept paper on the distributing ACTs through the private sector.
- Conducted a situational analysis of the private sector in Montserrado County, Liberia to explore the feasibility of distributing subsidized ACTs through the private sector specifically looking at the overall regulatory framework, in which private providers operate, the supply chain through which they obtain medicines, and their readiness to participate in this intervention. In addition, private pharmacies were assessed on their ability to participate in the program.
- Following the situational analysis, a stakeholders meeting was held where key stakeholders were briefed on the key findings and the proposed activities to distribute subsidized ACTs through private sector in Liberia. Stakeholders came to consensus on the strategies to implement the program. Consequently, SPS and the NMCP developed an implementation plan highlighting key activities and timelines prior to the distribution of ACTs.
- Capacitated 16 national trainers with the necessary skill on the management and distribution of ACTs in the private sector to facilitate rollout trainings in Montserrado County.
- Increased knowledge of 176 dispensers from the various pharmaceutical outlets on the management and distribution of ACTs in the private sector in Montserrado County.

Strengthened MOHSW's rational use of medicine program

- Provided support to MOHSW to define Rational Use of Medicine interventions. An assessment was conducted to identify medicine use problems and strategies that will eventually advance rational use and improve health care. The results were presented in a stakeholders meeting where stakeholders discussed different strategies to improve use of medicines and also identified priority Rational Medicine use interventions.
- Helped revise and disseminate three key policy documents: standard treatment guideline, national formulary and essential medicines list.
- Sponsored the participation of representatives from the NMCP/MOH and the Liberia Medicines and Health Products Regulatory Authority in an international pharmacovigilance conference which took place from August 16–18, 2010, in Nairobi, Kenya.

Key Tools and Publications

- *Situational Analysis of the Pharmaceutical Sector and Access to Antimalarial Medicines in Liberia*
- Liberia School of Pharmacy curriculum
- Standard treatment guidelines, essential medicines list, and national formulary for Liberia
- Job aids for county pharmacists

Collaborating Organizations

- National Malaria Control Program
- Division of Pharmacy
- Liberia Medicines and Health Products Regulatory Authority
- School of Pharmacy at the University of Liberia
- West Africa Regional Technical Resource Collaboration for Pharmaceutical Management
- USAID/DELIVER project

Acknowledgements

We would like to acknowledge and thank the various MOHSW agencies and health care facilities that were partners in our activities in Liberia, in addition to collaborating organizations mentioned above.

Madagascar
2008–2009/ 2011–2012
Funding: \$400,000

Background

In 2008, SPS received funding from USAID under the President’s Malaria Initiative (PMI) to strengthen pharmaceutical management for malaria. At an initial visit, SPS and JSI | DELIVER worked with national stakeholders to develop an action plan that focused on strengthening the capacity of the Directorate of Pharmacy, Laboratories and Traditional Medicine (DPLMT) and the national malaria program, as well as supporting the National Institute for Public and Community Health (INSPC) to develop pre-service training on pharmaceutical management. However, because of the political instability, the US government suspended direct collaboration with the government of Madagascar in March 2009 and these activities were halted. In September 2011, USAID asked SPS to invest the remaining funds in activities designed to support the nongovernmental and faith-based organizations (NGOs/FBOs) tasked with malaria prevention and case management in Madagascar.

SPS’s technical objective in Madagascar was to strengthen the capacity of NGOs and FBOs tasked with malaria prevention and case management in rational medicine use and quality assurance of malaria commodities.

Major Activities/Accomplishments

- Conducted an initial rapid assessment of the pharmaceutical management needs of the NGOs/FBOs providing malaria diagnosis and treatment and proposed an action plan to address issues identified in the assessment.
- Provided training on all the components of pharmaceutical management for malaria, particularly rational use and quality assurance of malaria commodities, to strengthen the capacity of the NGOs/FBOs to manage medicines at service delivery facilities; trained 19 participants from 9 PMI-supported NGOs/FBOs to be able to train their colleagues in their respective facilities.
- Provided PMI-supported NGOs/FBOs with an orientation on the End-Use Verification tool to strengthen their capacity to monitor the availability and use of malaria commodities for case management; targeted 11 NGO/FBO staff members in charge of managing malaria commodities and monitoring malaria case management.

Key Tools and Publications

- Presentation and report on initial assessment (2008)
- Presentation on assessment of NGO/FBOs (2011)
- Training material on pharmaceutical management of malaria commodities
- End-Use Verification tool adapted for Madagascar

Collaborating Organizations

- USAID | DELIVER
- Improving Malaria Diagnostics
- Research Triangle Institute/Santénet 2
- Malagasy Heniky ny Fahasalamana
- Population Services International (PSI)
- Commission Episcopale de la Santé/Eglise Catholique Romaine
- Fianakaviana Sambatra
- Sampan'Asa Fampandrosoana/Fiangonan'i Jesoa Kristy eto Madagasikara (Programme de Développement/Eglise Réformée de Jésus Christ à Madagascar)
- Sampan'Asa Loterana momba ny Fahasalamana (Programme Santé Luthérien)

Acknowledgements

We would like to thank all the collaborating NGOs and FBOs mentioned above and the health care facilities that contributed to the accomplishment of our activities in Madagascar.

Malaria
2007–2011
Funding: \$1,400,000

Background

The SPS Program provides global leadership in pharmaceutical management for malaria to USAID and the President’s Malaria Initiative (PMI) as well as to other global malaria initiatives such as the Roll Back Malaria (RBM) working groups. SPS also collaborates with national malaria control programs and central medical stores to develop and implement strategies to strengthen pharmaceutical management for malaria prevention and case management. This includes country-specific technical assistance to assess and improve pharmaceutical management systems for malaria, as well as the design and dissemination of PMI program tools.

Major Activities/Accomplishments

Technical leadership to global malaria initiatives

Roll Back Malaria (RBM) Initiative

- Since 2007, served as co-chair for the Procurement and Supply Chain Management Working Group (PSMWG) providing technical, organizational, and strategic guidance to the group members and the RBM board; facilitated the planning and organization of several PSMWG and other RBM meetings; elected as RBM alternative board member for the nongovernmental organization delegation.
- Participated in the RBM Forecasting Task Force to address the need for an accurate global forecast for artemisinin-based combination therapies (ACTs).
- Provided inputs to the Global Malaria Action Plan.
- Supported African RBM regional network partnerships through technical assistance and participation in meetings where best practices in pharmaceutical management are presented; supported the Central African RBM network partnership to perform a diagnostic mission on malaria case management and prevention in Cameroon.

Global Fund to Fight AIDS, Tuberculosis and Malaria

- Participated and managed the procurement and supply management portion of joint PSMWG and Global Fund workshops (2009, 2010), where countries shared lessons learned in the implementation of Global Fund grants.
- Reviewed the pharmaceutical management aspects of Global Fund proposals for several African countries, resulting in 100% of round 9 and 79% of round 10 proposals being approved for funding.
- Supported 10 countries to resolve procurement and supply management bottlenecks encountered during their Global Fund grant implementation. As a result, signature was accelerated in Burundi, Cameroon, Guinea Bissau, Sierra Leone, Zambia, Gambia and Burkina Faso, policies were updated in Eritrea, implementation bottlenecks were alleviated in Guinea and Benin, an ACT stock out was avoided in South Sudan, and the Global Fund round 6 procurement and supply management plan for Guinea Bissau was approved.

- Participated in the Affordable Medicine Facility for malaria task force meetings and provided inputs into three work streams (local production, buyer eligibility, forecasting).
- Participated in the development of a questionnaire to analyze bottlenecks encountered in the procurement and supply management of long-lasting insecticide treated nets.
- Helped develop a position paper estimating raw material requirements for ACT production and indentifying a potential gap in supply. As a result, a consortium was developed to address this issue.

Technical leadership to other initiatives

- Provided technical input to several global-level meetings including the Coartem® dispersible tablet launch by Novartis, a workshop organized by the United Nations Development Programme on implementation of Global Fund grants, and the World Health Organization's regulatory meeting that addressed changing the legal status of ACTs to over-the-counter.
- Reviewed country reports from the ACT Watch project as part of SPS's role on the ACT Watch Advisory Committee.
- Served on the Malaria Taxes and Tariffs Advocacy Project Advisory Group, which is an initiative to advocate for the removal of taxes and tariffs on antimalarial commodities.

Technical support to the President's Malaria Initiative

- Worked in conjunction with USAID/DELIVER and PMI to develop, update, and implement three different PMI monitoring tools: the PMI Health System Strengthening Assessment tool¹ that SPS developed to track progress and guide PMI investments in five different categories of the pharmaceutical management system; the End Use Verification² tool to track malaria commodities and monitor rational use and adequate adherence to treatment guidelines; and the Procurement Planning and Monitoring Report for Malaria³ tool to track availability of commodities and enhance procurement decisions. The tools are available in French and Portuguese.
- Supported the Ghana Health Service in pharmaceutical management for malaria to review and revise Ghana's commodities monitoring tool and pilot the EUV tool in Ghana using cell phone technology and a lot quality assurance sampling methodology.

Publication and dissemination of best practices for pharmaceutical management for malaria

- Developed two guidance documents on estimating severe malarial medicines needs and quantification of malaria commodities.
- Finalized the monitoring and evaluation of ACT implementation guide, which is an indicator-based tool designed to help users monitor and evaluate the pharmaceutical management aspects of ACT policy implementation.

¹ Implemented in Angola, Benin, Ethiopia, Kenya, Liberia, and Uganda , Malawi, Ghana and Liberia

² Implemented using both the paper-based instrument and the cell phone technology tool in Angola, Benin, Burundi, Ethiopia, Kenya, Liberia, Mali, Malawi, and Uganda

³Implemented in Angola, Benin, Burundi, Ethiopia, Kenya, Mali, Malawi, Senegal, and Uganda

- Developed a web-based malaria toolbox global- and country- level malaria programs
- Updated and disseminated existing SPS and RPM Plus training materials including pharmaceutical management for malaria and quantification.
- Collaborated with the USAID/DELIVER project to brief PMI senior management team on the benefit of the implementation of EUV tool to monitor malaria commodities in PMI countries.
- Presented at the PSMWG meeting on cell phone based initiatives to address the problem of stock level visibility at the health facility.
- Contributed to a chapter on pharmaceuticals in the textbook *Global Health: Diseases, Interventions, Systems, and Programs* at the request of the London School of Hygiene and Tropical Medicine.
- Made a poster presentation on “Strengthening Supply Chain Health Systems by Using Mobile Technology to Determine Malaria Commodity Availability in Remote Areas” at the mHealth Summit held in 2010.
- Developed a guide for implementing the logistics management system for malaria commodities using the applying the monitoring-training-planning approach. The guide is intended to assist managers, planners, technical advisors, and health care workers improve their logistics management skills through continuous performance monitoring.

Key Tools and Publications

- *Estimating the Need for Severe Malaria Medicines: A Practical Guide*
- *Manual for Quantification of Malaria Commodities*
- *Monitoring and Evaluation of Pharmaceutical Management Aspects of ACT Policy Implementation: An Indicator-Based Tool*
- Malaria toolbox at http://www.msh.org/projects/sps/SPS-Documents/upload/sps_malaria_toolbox.pdf
- Applying the monitoring-training-planning approach to logistics management for malaria, October 2011

Collaborating Organizations

- Global Fund to Fight AIDS, Tuberculosis and Malaria
- Roll Back Malaria
- West Africa Roll Back Malaria Network (WARN)
- USAID/PMI
- USAID/DELIVER
- World Health Organization

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Senegal
2008–2011
Funding: \$1,305,000

Background

In 2006, malaria was a major cause of morbidity and mortality in Senegal and a public health priority for the Ministry of Health (MOH). The MOH, through the Division de l'Alimentation, Nutrition et Survie de l'Enfant, in collaboration with Rational Pharmaceutical Management Plus, carried out a study on the quality of case management, particularly availability and use of medicines for children under five years of age in primary health care facilities. The principal problems identified were frequent stock-outs and inappropriate use of medicines and inventory management tools. The assessment also revealed regular stock-outs of essential medicines at the central medical stores (Pharmacie National d'Approvisionnement), which negatively impacted the availability of key medicines at lower levels of health care. In 2008, SPS received funds from USAID to provide technical assistance to the MOH to develop policies and strategies to strengthening pharmaceutical management for malaria and tuberculosis (TB).

Technical objectives in Senegal were to—

- Increase access to and appropriate use of malaria and TB medicines
- Build the capacity of pharmaceutical management staff in pharmaceutical management at health centers, health posts, and TB treatment centers

Major Activities/Accomplishments

- Developed inventory management training materials for malaria.
- Developed and validated TB medicines management guidelines for use in TB treatment centers.
- Conducted training of trainers on inventory management guidelines for 41 pharmacists from central, regional, and district medical stores.
- Rolled out pharmaceutical management training to 768 staff members at health centers, health posts, and TB treatment centers who are responsible for managing and dispensing medicine in all districts in 11 out of 14 regions across Senegal.
- Developed a pharmaceutical management supervision guide for health workers at the regional, district and peripheral levels.
- Built the capacity of and supported the Malaria Control Program to conduct post training supervision visits.
- Supported the Malaria Control Program to conduct district quarterly reviews of malaria commodities and case management data to improve availability and use of medicines for malaria case management.



A pharmacy depot worker reviewing stock cards during a supervision visit in Louga region

- Supported the MOH to integrate different vertical pharmacovigilance programs into a national pharmacovigilance program.
- Provided technical support to the MOH to update the essential medicine list.
- Supported the NMCP and the central medical stores in quantification and distribution of artemisinin-based combination therapy.
- Supported the central medical stores to develop a strategy to strengthen the MOH procurement and distribution system.

Key Tools and Publications

- Pharmaceutical management training materials
- Supervision guide for pharmaceutical management

Collaborating Organizations

- Université Cheikh Anta Diop
- Pharmacie National d’approvisionnement
- United Nations Children’s Fund
- World Health Organization

Acknowledgements

We would like to acknowledge and thank the MOH and all the collaborating organizations that have contributed to the accomplishment of our activities in Senegal.

Maternal and Child Health
2007–2012
Funding: \$4,220,200

Background

As part of its MCH core portfolio, SPS supported the prevention of postpartum hemorrhage through the introduction and expansion of active management of the third stage of labor (AMTSL). SPS worked with international and national stakeholders to develop guidance and tools to assist health care workers in ensuring the availability and appropriate use of uterotonics. SPS also strived to ensure that priority interventions for case management of childhood illnesses were successfully introduced and integrated into the public and private sectors. Beginning in 2007, SPS supported the introduction and implementation of community case management of childhood illnesses (CCM) programs with a focus on developing strategies to incorporate private sector pharmacies and drug retail outlets into national CCM programs. SPS also worked to strengthen community health worker programs and to scale-up the use of zinc salts and low-osmolarity oral rehydration solution (ORS) for diarrhea in children. Throughout the program, the MCH program supported maternal health interventions activities in priority countries, such as Benin, Ghana, Kenya, Mali, and Rwanda and CCM activities in the Democratic Republic of the Congo (DRC), Rwanda, Senegal, and Tanzania.

Major Activities/Accomplishments

Maternal health

- Worked closely with the Prevention of Post-Partum Hemorrhage Initiative (POPPHI) to define and disseminate the appropriate pharmaceutical management practices necessary to ensure the availability of uterotonics for AMTSL
- At the conclusion of POPPHI, SPS continued to collaborate with the USAID Maternal and Child Health Integrated Program (MCHIP) on pharmaceutical management related to prevention and treatment of post-partum hemorrhage and pre-eclampsia/eclampsia.

Benin

- In collaboration with POPPHI, supported the Ministry of Health (MoH) in scaling up AMTSL by helping adapt and distribute job aids for storage of pharmaceutical products and develop and incorporate pharmaceutical management training materials in training curriculum.

DRC

- Conducted an assessment of the availability, storage, and use of postpartum hemorrhage and eclampsia medicines in DRC: a key finding was the absence of magnesium sulfate in the national eclampsia management policy and related guides. As a result, SPS provided technical assistance to revise of the National Essential Medicines list to include magnesium sulfate.

- Provided support to the National Reproductive Program to review and update technical guidelines for the management of postpartum hemorrhage and eclampsia.
- Collaborated with MCHIP and the USAID-funded Integrated Health Program to provide technical assistance to finalize and obtain approval for the revised maternal, newborn, and child health guidelines, presented in eight modules; collaborated with technical partners to organize a workshop on the finalization of the guidelines.

Ghana

- Collaborated with POPPHI on a study of AMTSL to provide the MOH/ Ghana Health Service and relevant stakeholders with the information necessary to assess practices and identify major barriers to AMTSL use; shared findings at a dissemination workshop,
- Worked with the Ghana Health Service to conduct a joint training on pharmaceutical management for obstetricians, nurses, and pharmacists and to develop and disseminate job aids for the storage and handling of uterotonics.

Kenya

- Conducted an assessment on the availability and management of maternal health commodities .The results will be used to identify specific areas of intervention for MCHIP and the MOH.

Mali

- Provided support to scale up the practice of AMTSL including the development and implementation of a reproductive health commodity security plan.
- Developed job aids for the storage of uterotonics in the pharmacy and delivery room; conducted an assessment on the availability and management of emergency obstetric medicines.

Rwanda

- Initiated a rapid assessment of the pharmaceutical management of medicines and supplies for preventing and managing emergency obstetric and newborn conditions in Rwanda, which was used to identify specific areas of intervention for the MOH; developed data collection instruments and samples were developed which were approved by the ethics review committee.

Child health

- Collaborated with the A2Z project to address pharmaceutical management of micronutrients; conducted assessments in India, Uganda and Cambodia, followed by implementation of recommended interventions to address identified gaps.

DRC

- Provided technical assistance to revise the standard operating procedures of the Direction of Pharmacy and Medicines.
- Conducted an assessment on the availability and use of zinc in DRC; used results to develop a distribution plan for zinc; supported the MOH to develop job aids and to orient health workers on the use of zinc and low osmolarity ORS to manage childhood diarrhea.
- Conducted an assessment of the private health sector to manage childhood illnesses in two districts in Kinshasa—
 - Helped the MOH adapt training materials and train a pool of trainers to train private sector pharmacy workers in the integrated management of childhood illnesses.
 - Supported the MOH and the Syndicate of Pharmacists to train 56 staff from 54 private pharmacies in the two districts to be the pilot pharmacies.
 - Provided support to the MOH to develop a supervision tool and monitor the implementation of activities in the pilot pharmacies.
 - Conducted an end-line assessment that found a general improvement of knowledge of danger signs and treatment of diarrhea and malaria, but not pneumonia. Referral of cases also improved from 2.8% in 2009 to 18.8% and 31.6% in simulated and supervised cases respectively.

Rwanda

- Provided pharmaceutical management support to the MoH in Rwanda in the scale-up of CCM, responding to issues highlighted in an external evaluation of home-based management of malaria conducted by SPS and BASICS; provided specific technical assistance in implementation of iCCM.
- Worked with the MOH Community Health Desk (CHD) and BASICS to conduct a rapid evaluation of the iCCM program which identified interventions that CHD carried out including the refresher training of supervisors and community health workers and development of a coordinated consumption monitoring system for the pharmaceutical products; supported a follow-up evaluation including helping develop tools and methodology as well as funding. The CHD proposes to conduct annual evaluations of CCM to track progress and the success of the strategy.
- Provided assistance to finalize the development of tools and training materials for the pharmaceutical management component of the CCM program including a pictorial job aid on good storage and dispensing practices; helped revise stock cards for community health workers and printed 150,000 copies.
- Collaborated with the CHD to develop a supervisory check list for health centers and orient district pharmacists in the supervision of community health workers and the management of medicines at health centers; began development of standard operating procedures of pharmaceutical management.
- Carried out a quick study of the forms and presentations of the medicines used by the community health workers and recommended improvements in packaging and presentation. For example amoxicillin 125mg dispersible tablets in blisters were preferred to a pot of 1000 non-dispersible tablets that needs packing down; assisted CHD and the central medical stores to develop technical specifications to be used for the next procurement and in the

quantification; revised the national essential medicines list to ensure the presentations and forms were included.

- Helped CHD develop a system for reporting of medicine consumption and use by community health workers.

Senegal

- Provided technical assistance to the Direction de l'Alimentation, de Nutrition et de la Survie de l'Enfant (Food, Nutrition, and Child Survival Division) for the introduction and extension of low-osmolarity ORS combined with dispersible zinc tablets in accordance with the recommendations of the new WHO guidelines for diarrhea treatment in children—
 - As part of a steering committee, facilitated the revision of the national essential medicines list to include low-osmolarity ORS and dispersible zinc tablets and related tools and job aids; developed a document on the new diarrhea treatment guidelines with low-osmolarity ORS and zinc.
 - Provided technical and financial support for workshops to prepare, print, and disseminate the guidelines as well as supported initial and refresher trainings.
 - Assisted in the integration of dispersible zinc tablets in international calls for tenders of the national medical store.
 - Facilitated the quantification of Senegal's ORS and zinc needs.

Tanzania

- Worked with the Tanzania Food and Drugs Authority (TFDA) and the Ministry of Health and Social Welfare to develop and implement a child health component in the accredited drug dispensing outlet (ADDO) program, focusing on the management of pneumonia, diarrhea and malaria—
 - Helped engage community leaders, district officials, and radio journalists to produce radio spots that encourage illness prevention and appropriate care-seeking practices for children; conducted two radio workshops focusing on recognizing danger signs for sick children and appropriate management of malaria, diarrhea, and acute respiratory infection.
 - Conducted a baseline study which found that the workshops empowered the radio personnel with skills on radio spot production, as well as detailed knowledge on the leading causes of childhood morbidity and mortality. It had a positive influence on coverage of health issues by some of the stations.
 - Developed a training module for the management of childhood illnesses to incorporate zinc salts for diarrhea treatment. The training module was fully incorporated into the ADDO dispensers training package.
 - Trained members of the Community Health Management Teams, trainers, and dispensers using the child health module in 9 districts: 3,362 dispensers from 1,438 ADDOs in 8 regions were trained using the module. Moreover, 199 members of District Council Health Management Teams from these regions were trained on integrating IMCI in the ADDOs.

- Conducted an end-line assessment in 213 ADDOs in four regions, which concluded that despite improvements in dispensers' knowledge in managing childhood illnesses, there was still a gap between dispensers' knowledge and actual practice.

Key Tools and Publications

- *Evaluation of the A2Z Project's Support for Pharmaceutical Management of Micronutrients and Anemia Reducing Medicines in Uganda* (2011)
- *Improving the Pharmaceutical Management of Micronutrients and Anemia Reducing Medicines: Lessons Learnt from the Experiences in Cambodia, India and Uganda- DRAFT* (2011)

DRC

- Revised final maternal, newborn, child health guidelines/ norms (8 modules)
- Job aid for the management of diarrhea (French)
- *Technical Guidelines for the Management of Diarrhea* (French)
- *Knowledge and practices of private pharmacy staff on the management of childhood illness in two health districts of the city-province of Kinshasa, Democratic Republic of Congo, August 2009: Assessment report* (French)
- *Evaluation of the pilot phase of the introduction of the management of childhood illnesses in the private pharmaceutical sector in two health districts of the province of Kinshasa, Democratic Republic of Congo* (French)
- Supervisory report on the monitoring of pilot private pharmacy workers in the province of Kinshasa, Democratic Republic of Congo on the management of three childhood illnesses: pneumonia, diarrhea, and malaria

Ghana

- Job aids on the storage of uterotonics in the pharmacy and delivery room
- Training materials on the pharmaceutical management of uterotonics

Mali

- Job aid on the storage of uterotonics in the pharmacy and delivery room.
- Final report on the assessment of the availability and management of uterotonics for emergency obstetric condition in Mali (French and English)

Rwanda

- *Community IMCI / Community Case Management, Report of Rapid Evaluation of Community Health Workers Performance 2009*
- Training module for management of medicines and rational use for the community health worker trainings
- Report of team building of central level trainers

- Report of rapid study of presentations of medicines for CCM 2009
- Draft scheme for drug management of CCM
- Job aid on storage and dispensing practices for community health workers
- Report of the rapid evaluation of the national community integrated management of childhood illnesses (c-IMCI) program

Senegal

- Training tools for private sector pharmacists and pharmacy drug sellers on the management of diarrhea, pneumonia, and malaria (French).
- Report on the training of private sector pharmacies in Senegal on the integrated management of the three childhood illnesses: diarrhea, pneumonia, and malaria.

Tanzania

- Accredited drug dispensing outlet training: child health facilitation guide
- Accredited drug dispensing outlet training: child health dispenser's manual
- *Training of ADDO Dispensers in the Revised Diarrheal Disease Management Guidelines, Morogoro, Tanzania: September 15–30, 2008*
- *Access to Child Health Information through Radio: Baseline Survey, Morogoro Region, Tanzania, January 2009*
- *Final Community Case Management Assessment for Children Under Five through Tanzania ADDOs*

Collaborating Organizations

- United Nations Children's Fund
- United Nations Population Fund
- World Health Organization
- Integrated Health Program
- Maternal and Child Health Integrated Program
- BASICS

Acknowledgements

SPS would like to thank the ministries of health and other local organizations in the countries, as well as any other collaborating organizations that may have been missed above.

Mozambique
2010–2011
Funding: \$500,000

Background

In recognition of the importance of the pharmaceutical sector to the overall functioning of an integrated health system and quality of services—particularly for priority health conditions such as HIV/AIDS—USAID/Mozambique enlisted SPS to strengthen the sector’s institutional and technical capacity with PEPFAR funds in 2010–2011. Based on the gaps that were initially identified in the pharmaceutical system, SPS focused its technical assistance on supporting the pharmaceutical partners in the Ministry of Health (MISAU) in the areas of policy, regulation, pharmacovigilance, and rational use. These activities laid the groundwork for follow-on capacity building and system strengthening activities.

Major Activities/Accomplishments

- Conducted a situational analysis of the pharmaceutical sector to identify key gaps within the Pharmacy Department and other areas of the Ministry of Health and to recommend follow-on technical assistance activities for SPS to carry out.
- To build upon the information gathered in the rapid assessment (see above), facilitated a 3-day stakeholder workshop in December 2010 to reach consensus on key gaps, priorities and interventions to strengthen the pharmaceutical sector; 67 participants representing 22 institutions participated. The proceedings and results of the workshop, including SPS recommendations for interventions, were presented in a final report for dissemination.
- Conducted an ABC analysis with the Central Medical Store (CMAM) to assess how government funds were being used to procure essential medicines relative to their level of use and public health impact; presented the results to stakeholders and documented them in a technical report.
- Conducted an options analysis of the pharmacovigilance system in collaboration with the Pharmacy Department and other stakeholders, including the Center for Medicine Information at the Faculty of Medicine and priority health programs; a national framework for pharmacovigilance that reflected existing institutions, functions, relationships and services, as well as areas to be developed and expanded.
- Organized a three-day leadership and management capacity-building workshop for 22 Pharmacy Department staff members. The workshop focused on team-building, communication and consensus-building.
- Enlisted the support of a World Health Organization (WHO) consultant to train the product registration team on the evaluation of medicines for registration/marketing authorization. The registration team participated in a 6-day initial training, after which SPS helped them apply their knowledge to the revision and development of tools to improve the registration process; conducted a follow-up training four months later to solidify participants’ knowledge, introduce more complex topics, and review the draft tools. The result was an action plan for addressing gaps and weaknesses in the registration system developed by SPS and the Pharmacy Department, which will be implemented with support from SIAPS.

- Supported the participation of two Pharmacy Department staff members at a regional pharmacovigilance conference in Kenya in 2011 and at a WHO rational use training course in India in 2011.

Key Tools and Publications

- *Rapid Assessment of the Pharmaceutical System in Mozambique*, July 2010
- *Strengthening the Pharmaceutical Sector in Mozambique – Stakeholder Workshop and Options Analysis of Interventions*, December 2010
- *ABC Analysis: Technical Report*
- *Strengthening the Medicines Safety System in Mozambique: Technical Report*
- *Training in the Evaluation of Medicines*, training materials

Collaborating Organizations

- Pharmacy Department (MISAU)
- Central Medical Stores (CMAM)
- Center for Medicine Information, National Faculty of Medicine
- Department of Hospital Pharmacy, DNAM, MISAU
- US Pharmacopeial Convention/Promoting the Quality of Medicines
- Supply Chain Management Systems and JSI/DELIVER projects

Acknowledgements

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**Namibia
2007–2011**

Funding Leader: \$11,135.647/Associate: \$2,869,216

Background

With an increasing need to treat people living with HIV/AIDS in Namibia, the role of the SPS Program was to improve pharmaceutical service delivery to ensure uninterrupted access to antiretrovirals in all health facilities.

The SPS/Namibia Program was implemented under the following technical objectives—

- Improve access to ART treatment and other essential medicines
- Improve rational use of medicines and strengthen interventions to contain antimicrobial resistance
- Strengthen management systems and human capacity development for pharmaceutical services
- Strengthen medicine regulation and improve governance in the pharmaceutical sector

Major Activities/Accomplishments

- Re-established the Pharmacy Management Information Systems (PMIS), and the Therapeutic Committees (TC) and the Essential Medicines Committee. The proportion of therapeutic committees functionality as measured by number of TC meetings held and documented increased from 40% to 72%.
- Established a new medicines/patient safety intervention that resulted in the establishment of the Therapeutics Information Pharmacovigilance center TIPC. Namibia became the 90th Member Country of the WHO collaborating Centers and Adverse Drug Reports (ADR) increased from none to 25 reports monthly. The SPS program also supported the TIPC accomplish the AZT study that determined the incidence of severe anemia in AZT users of 2.28 per 100 person-years.
- Strengthened human resource development through support to and establishment of a new Pharmacy Degree Program in the University of Namibia - UNAM, and the National Health Training Centre – NHTC. By the end of the SPS program, 20 students were enrolled into the Pharmacy degree program while 45 students graduated as Pharmacists Assistants.
- Strengthened the Electronic dispensing tool system from a paper based system to an electronic management of pharmaceutical services both at facility level and at the national level.
- Strengthened service delivery by providing human resources to fill up vacancies increasing the percentage of pharmacist and pharmacist's assistants' posts filled in the public sector from 39% to 81% and 68% to 91% respectively. This increase in pharmaceutical posts filled reduced the population per pharmacist from 260,979 to 50,912.
- At service delivery points the accuracy of stock cards in the public hospitals increased from 71% to 92% while rational use of antibiotics improved by a reduction of antibiotics prescribed from 75% to 55.4% of prescriptions.

Key Tools and Publications

International meeting presentations

- The Presidents Emergency Plan for AIDS Relief (PEPFAR) implementer's meeting, 2008, Windhoek,
- PEPFAR implementer meeting, 2007, Kigali
- ICASA, 2008, Dakar, Senegal
- APHA , 2007, Washington, DC
- Pharmacovigilance conference, 2010, Nairobi
- Health Systems Research Symposium, 2010, Montreaux, Switzerland
- International Federation of Pharmacists (FIP) Congress, 2010, Lisbon
- International Conference on Rational Use of Medicines, 2011, Antalya, Turkey

Key products

- ART Decentralization Survey Report
- Electronic Dispensing Tool (EDT) Training Manual
- Rx Solutions Baseline Survey
- Updated Fourth Edition of the Essential Medicines List
- Therapeutics Committees Terms of Reference
- Namibia Infection Control Assessment Tool (ICAT)
- Comparison of public sector wholesale cost of ARV medicines in Namibia, 2010
- Assessment on retention of pediatric patients on therapy
- ART quarterly feedback report (4)
- Impact of inter-facility patient movement on patient retention on ARV therapy
- Pharmacy management information system quarterly reports (4)
- Zidovudine anemia study report
- Treatment literacy post evaluation report
- *Medicines Watch*
- Draft Namibia Medicines Policy
- Draft Namibia Medicines Master Plan
- National Health Training Centre competency framework
- National Health Training Centre curriculum
- University of Namibia competency framework
- University of Namibia Pharmacy degree program curriculum
- University of Namibia process curriculum development process report

Collaborating Organizations

- Ministry of Health and Social Services
- The University of Namibia
- The National Health Training Centre
- The Namibia Health Plan (NHP)

- The KNCV Tuberculosis Foundation
- Intra Health Capacity Project
- University Research Company (Safe Injection and Infection Prevention project)

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**USAID Office for Foreign Disaster Assistance (OFDA)
2007 and 2011–2012
Funding: \$100,000**

Background

When a natural or man-made disaster occurs and the affected country requests or accepts international assistance, OFDA leads the US government response. When medical assistance includes pharmaceuticals, USAID requires that any pharmaceuticals purchased with government funds meet international standards for safety, efficacy, and quality. According to OFDA, nongovernment organizations (NGOs) who receive funding from OFDA often procure essential medicines from wholesalers that do not meet USAID or other internationally accepted standards for pharmaceutical products. Also, NGOs frequently do not provide procurement documentation to meet USAID waiver requirements for drugs that are not of US source and origin. OFDA asked the SPS Program to—

- Develop a process to precertify wholesalers with the goal of creating a list of approved wholesalers for NGOs to purchase quality medicines, thereby streamlining the USAID waiver process
- Help drug wholesalers increase their understanding of internationally accepted minimum standards for purchasing, distribution, and storage of pharmaceuticals to ultimately increase the number of local drug wholesalers who could potentially supply USAID-funded NGOs

Major Activities/Accomplishments

- Developed a wholesaler prescreening process and tool.
- Assessed several European and African wholesalers using the precertification tool based on the World Health Organization Model Quality Assurance System for procurement agencies.
- Finalized the wholesaler precertification tool based on European and African wholesaler assessments; tool subsequently adapted by the Supply Chain Management System (SCMS)/USAID who currently used it to assess and approve international wholesalers authorized to sell pharmaceuticals to USAID contractors.
- Supported a wholesaler quality assurance workshop in collaboration with QUAMED, which was attended by procurement organizations from Burkina Faso, Madagascar, Benin, Burundi, Kenya, Congo, and the Democratic Republic of the Congo.



OFDA / QUAMED workshop attendees, Kinshasa, November 2012

Key Tools and Publications

- Wholesaler prescreening tool
- Wholesaler precertification tool

Collaborating Organizations

- Amsterfarma, Amsterdam, Netherlands
- IDA Foundation, Amsterdam, Netherlands
- Lords Healthcare Limited, Nairobi, Kenya
- MedPharm, Alexandria, VA
- Mission for Essential Drugs and Supplies, Nairobi, Kenya
- MissionPharma, Copenhagen, Denmark
- Nubenco, Paramus, NJ
- Omaera Pharmaceuticals, Nairobi, Kenya
- Phillips Pharmaceuticals, Nairobi, Kenya
- QUAMED, Antwerp, Belgium
- UNICEF Supply Division, Copenhagen Denmark

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Philippines
2007–2012
Funding: \$1,540,000

Background

Since the adoption of the DOTS strategy in 1997, the National TB Control Program (NTP) has worked with private providers, businesses, civil society, and other government agencies to scale-up services. In the late 1990s, the Tropical Disease Foundation spearheaded efforts to address the problem of drug-resistant TB with support from the government and the Global Fund. The initiative was mainstreamed into the NTP, where it is called the programmatic management of drug-resistant TB (PMDT). The NTP's strategic approaches are to mobilize the local governments as the main drivers of TB control and to ensure that quality DOTS services are scaled up and sustained to improve accessibility and address the needs of vulnerable populations. With the increase of facilities offering MDR-TB treatment (from 10 in 2010 to more than 25 in 2012), NTP and USAID asked that SPS support the Drugs Supply Management team to avoid risk of interruption of medicines and supplies for MDR-TB.

Since 2007, SPS has worked with the Philippine Department of Health (DOH) and stakeholders to promote pharmaceutical management best practices related to multi-drug resistant TB (MDR-TB). In 2010, concerns arose that the transition of PMDT from the Tropical Disease Foundation to NTP could result in treatment interruptions. Subsequently, SPS facilitated the transition process and developed interventions and capacity-building measures for pharmaceutical management, diagnostic laboratory system management, and a management information system.

The technical objectives were to—

- Support the expansion of a national information system for the programmatic management of drug resistant TB
- Improve pharmaceutical/logistics management for TB-related medicines and products
- Improve management of the National TB Program Laboratory Network

Major Accomplishments

Philippines-based regional activities

- Conducted a regional workshop on pharmaceutical management for TB and MDR-TB that included a rapid assessment of medicine management practices for MDR-TB and the development of country-specific improvement plans.
- Collaborated with partners including World Health Organization (WHO) Western Pacific Regional Office (WPRO), the US Centers for Disease Control and Prevention, the Philippine DOH, and USAID/Philippines to conceptualize a plan for a model regional center for MDR-TB at the Tropical Disease Foundation.
- Assisted in developing the assessment tool and analyzed country strengths, weaknesses, obstacles and threats (SWOT) to evaluate pharmaceutical management competencies and identify gaps in capacity in seven countries in the region.

Country-specific activities

- Supported pharmacists in PMDT and service delivery points in the selection, forecasting, quantification, and procurement of MDR-TB medicines and supplies.
- Helped develop guidelines and policies in pharmaceutical management of MDR-TB medicines, management of TB laboratory systems, and management of information systems
- Participated in both the Global Drug Facility and Green Light Committee monitoring missions to the Philippines and the Green Light Committee technical assessment of the MDR-TB treatment and management component of the Global Fund grant.
- Customized, installed, and monitored the countrywide implementation of the e-TB Manager software and trained staff to capture strategic patient information for the PMDT program; provided technical support to facilities using e-TB Manager and monitored customizations to the original version; collaborated with the DOH's National Epidemiological Center to conduct a national-level training of trainers for treatment centers and warehouses where e-TB Manager is implemented; collected at monitoring visits in four sites using the adapted list of indicators to assess implementation.
- Supported the DOH Information Management Services in migrating data to the new DOH TB management program.
- Built capacity of Drugs Supply Management staff in forecasting, quantifying, and procuring second-line drugs and other medicines and supplies—
 - Supporting onsite training and supervision of treatment centers in handling, monitoring, consumption, and dispensing of second-line drugs.
 - Monitoring MDR-TB medicines at central and regional warehouses.
 - Contributing to the development of the TB Procurement and Supply Management Manual of Procedures.
- Supported the Lung Center of the Philippines' Program Management Office to analyze results of case detection and treatment of drug-resistant TB patients.
- Conducted pharmaceutical management training to DOH pharmacists on TB and MDR-TB medicine management.
- Worked with Lung Center of the Philippines' Drugs and Supplies Management and Monitoring team in the supervision and monitoring of treatment centers and warehouses.
- Assisted the Philippine Business for Social Progress to strengthen its pharmaceutical procurement system by conducting training to comply with Global Fund procurement guidelines.
- Provided support to the DOH to develop, validate, and roll out the procurement supply management manual of procedure to standardize pharmaceutical management policies and improve practices.
- Conducted the following activities to strengthen the organizational, leadership, and management capacity of NTP laboratory services and operations, specifically the National TB Reference Laboratory (NTRL)—
 - Assessed the human resource needs of NTRL and its effectiveness in managing TB laboratory services and developed a plan to strengthen human resources capacity.
 - Provided technical leadership to central and intermediate level laboratory managers in strategic planning, guidelines development, training and supervision, improving

leadership and management skills, and analysis/interpretation of laboratory data for TB case finding and detection of drug-resistant TB patients.

- Conducted a rapid assessment of laboratory supplies management at NTRL.
- Conducted an economic analysis of TB laboratory services for planning, decision making, and the development of a financial management tool.
- Assisted the DOH to strengthen financial resources management within the laboratory network.

Key Tools and Publications

- *An assessment of the leadership and managerial capacity of the national TB reference laboratory to carry out its mandate and responsibilities for the national TB laboratory network of the Philippines*
- Procurement and supply management plan for the Global Fund on TB in the Philippines
- Training materials and presentations for the pharmacy mentoring/technical assistance
- *Introducing the leadership and management development capacity building process for the NTRL and the national lab network of the Philippines*
- Training materials/presentations for the training for trainers on e-TB Manager
- Procurement and Supplies Management Manual of Procedures
- *Report on effectiveness of NTRL in management of TB laboratories: issues in service delivery and financing*
- *Report on assessment of human resource needs of NTRL and Lung Center TB Laboratory*

Collaborating Organizations

- Department of Health
- National TB Control Program
- National Epidemiology Center
- Philippine Business for Social Progress
- WHO/WPRO
- Green Light Committee
- Global Drug Facility
- Lung Center of Philippines
- National TB Reference Laboratory
- Tropical Disease Foundation

Acknowledgements

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**USAID Population Office
2009–2010
Funding: \$90,000**

Background

The main objective of the USAID contraceptive security global leadership is to advance and support the planning and implementation for contraceptive security by improving decision making for contraceptive security through increased availability and analysis of procurement, distribution, and consumption data. As part of this effort, USAID has supported the development and management of the Procurement, Planning and Monitoring Report for contraceptive commodities (PPMRc), which compiles routine data on contraceptive stock levels from various countries on behalf of the Coordinated Assistance for Reproductive Health Supplies under the leadership of the Reproductive Health Supplies Coalition. In 2009, SPS received funding from the USAID’s Population Office of to support the collection and reporting of contraceptive commodity data into the PPMRc for Senegal, Mali and Democratic Republic of Congo, and in 2010,—two additional countries—South Sudan and Afghanistan. It was anticipated that this funding would support the initial year of PPMRc reporting, after which the reporting would be supported using country or field support funds.

SPS’s technical objective was to help countries increase availability of data on contraceptive commodities for improved decision making regarding contraceptive security.

Major Activities/Accomplishments

- Conducted county team orientations on PPMRc tools in five countries, including the data collection and reporting process.
- Coordinated the review and submission of PPMRc reports to USAID | DELIVER, which manages the compilation of the PPMRc at global level.
- Built the capacity of country teams to collect necessary data, prepare PPMRc reports, and submit them directly to USAID | DELIVER.
- Transitioned the reporting to three countries which continue without additional support.

Key Tools and Publications

The PPMRc reports constitute the key products of this activity. These are stored online (<http://ppmr.rhsupplies.org/content?id=1>)

Collaborating Organizations

- Ministries of health in the five countries
- USAID | DELIVER
- IntaHealth
- PSI
- United Nations Population Fund
- TechServe

- Marie Stopes International
- Afghan Social Marketing Organization/Compri-A

Acknowledgements

We would like to acknowledge and thank the ministries of health in the countries for which PPMRc reports were generated and all the collaborating organizations that have contributed to the accomplishment of PPMRc data reporting activities in the countries in which SPS set up the PPMRc reporting system.

Regional Development Mission Asia (RDMA)

2007–2011

Funding \$1,458,391

Background

Since its inception in 2007, the SPS Program received support from RDMA to strengthen the pharmaceutical management systems for malaria, tuberculosis (TB), and HIV/AIDS of countries in the region. A number of countries successfully obtained Global Fund to Fight AIDS, Tuberculosis and Malaria grants, which presented a unique opportunity for US government partners to provide technical assistance in support of related activities, including China and Laos. There was also a need to coordinate pharmaceutical management of HIV/AIDS, TB, and malaria medicines and other commodities, regardless of their source, at the country and facility levels, given multiple global initiatives.

SPS worked toward the following technical objectives—

- Improve governance in the pharmaceutical sector in the RDMA region, particularly in the areas of medicines policies, regulation, quality assurance, procurement practices and pharmacovigilance
- Improve the care and treatment of priority health conditions, including HIV and AIDS, TB, malaria, other childhood illnesses, and contain antimicrobial resistance by strengthening pharmaceutical management systems
- Strengthen regional and country-specific pharmaceutical management information systems to improve evidence-based decision making
- Increase the technical capacity in pharmaceutical management of country and regional institutions and networks by sharing information, replicating best practices, and collaboratively addressing pharmaceutical management issues of local and regional importance

I. Malaria Regional

Major Activities/Accomplishments

- Supported Thailand's Bureau of Vector Borne Diseases to improve pharmaceutical management practices during expansion of malaria posts under Global Fund Round 7; provided technical assistance to conduct an assessment of the supply system in areas where malaria services were integrated with routine public health services; developed materials for two-day training on management of malaria medicines and rapid diagnostic tests (RDTs) and trained 36 provincial health officers.
- Improved capacity of the national malaria program in Lao PDR in pharmaceutical management practices, specifically in information systems and quantification.
- Provided technical leadership in pharmaceutical management for malaria to key US government partners and regional organizations—

- Developed materials for Management of Malaria Field Operations session on procurement and supply management; conducted training for participants from seven countries; provided virtual follow-up support to course participants.
- Initiated an inter-regional exchange of best practices and lessons learned in pharmaceutical management for malaria programs in low-transmission areas with the Amazon Malaria Initiative.
- Participated in an assessment of the public-private mix strategy implemented under the Global Fund in Laos.

Key Tools and Publications

- *Assessment of ACT and RDT Management Practices under Implementation of Global Fund Malaria Grants in Laos*
- *Evaluation of Public Private Mix (PPM) Pilot Project in Laos PDR*
- *Assessment of the Supply Systems for Malaria in Thailand*
- Addendum chapter for the *Manual for Quantification of Malaria Commodities: Rapid Diagnostic Tests and Artemisinin-Based Combination Therapy for First-Line Treatment of Plasmodium Falciparum Malaria* to outline the nuances of ACT and RDT quantification in the RDMA region

Collaborating Organizations

- Bureau of Vector Borne Diseases (Thailand)
- Global Fund
- KIAAsia
- World Health Organization/Laos

II. TB Regional and TB China

Major Activities/Accomplishments

- Participated in regional efforts to improve technical and human resource capacity to execute tuberculosis (TB) control activities and address emerging multidrug-resistant TB issues in the Asia region.
- Provided technical assistance to TB programs in the region to address their specific pharmaceutical management needs; for example, SPS conducted a quantification and training of trainers course in Mongolia for key National Tuberculosis Program managers and district supervisors and provided post-training technical support to help Mongolia monitor implementation.
- Improved pharmaceutical management practices for TB through the development of a regional model center for MDR-TB (World Health [WHO] Center of Excellence for TB at Tropical Disease Foundation); helped with desk reviews of stakeholder country MDR-TB programs and collaborated to develop a strategy for the regional model center.
- Helped implement standard operating procedures (SOPs) in provinces, prefectures, and facilities to standardize the pharmaceutical management of first- and second-line TB medicines.

- Provided support to the TB management information system and e-TB Manager—
 - Collected information to help adapt the information system to better manage TB and MDR/XDR cases.
 - Developed an Excel-based quantification tool for fixed-dose combination TB medicines.
 - Conducted a training of trainers workshop on the management of second-line TB medicines in collaboration with FHI 360.

Key Tools and Publications

- *Standard Operating Procedures Manual for Managing Tuberculosis Drugs and Medical Supplies at Provincial TB Drug Warehouse in Henan Province*
- *Standard Operating Procedures for Managing Second Line Tuberculosis Medicines through the Chinese National Center for Tuberculosis Control and Prevention.*
- *Fixed-dose quantification Excel tool*
- *Standard Operating Procedures for Tuberculosis Drug Administration Training of Trainers Guide*
- *Standard Operating Procedures for Tuberculosis Drug Administration Participants Guide*

Collaborating Organizations

- China Center for Disease Control (CDC)
- FHI360
- National Center for Tuberculosis Control and Prevention
- World Health Organization

Acknowledgements

We would like to acknowledge and thank the various ministry of health agencies from RDMA countries and health care facilities who partnered in our activities in addition to collaborating organizations that have been mentioned above.

III. China HIV/AIDS

Major Activities/Accomplishments

- Worked with stakeholders, including WHO, National Center for AIDS/STD Control and Prevention, Guangxi Bureau of Health and CDC, to develop an action plan for strengthening antiretroviral pharmaceutical management.
- Developed SOPs for managing antiretrovirals at the provincial store, city and county CDC offices, and antiretroviral therapy (ART) and prevention of mother to child transmission sites and conducted two training workshops in SOP implementation.



Participants at SOP Validation Workshop

- Pilot tested SOPs in 17 selected sites representing all health service levels and conducted a post pilot evaluation and identified improvements in ARV management policy and practices to enhance patient adherence, including counseling and availability of medicines.

Key Tools and Publications

- *Standard Operating Procedures for ARV Management for Guangxi Province of China for Provincial Level*
- *Standard Operating Procedures for ARV Management for Guangxi Province of China for City and County Levels*
- *Standard Operating Procedures for ARV Management for Guangxi Province of China for Facility Level*

Collaborating Organizations

- Bureau of Health [Guangxi Province]
- Center for Disease Control [Guangxi Province]
- National Center for AIDS/STD Control and Prevention
- US Agency for International Development
- World Health Organization

Uganda
2007–2009
Funding \$700,000

Background

Uganda has one of the highest malaria burdens in sub-Saharan Africa and has been a focus country for the US President's Malaria Initiative (PMI). Uganda has also been the recipient of several malaria grants from the Global Fund. Among the key interventions to alleviate the disease burden is improving malaria case management using artemisinin-based combination therapy (ACT). However, Uganda was hampered by the lack of availability of quality ACTs and their rational use. Several factors contributed, including the lack of capacity at the national level to establish adequate policies and guidelines and carry out national quantifications, scarcity of quality pharmaceutical management information, weak inventory management, and inability at the district and peripheral levels to adequately manage and dispense ACTs.

The SPS Program was asked to provide technical support to PMI/Uganda in pharmaceutical management. The program's key objectives were to—

- Strengthen the capacity of the National Malaria Control Program (NMCP) and its key partners to assure an uninterrupted supply of malaria commodities.
- Strengthen the capacity of districts, facilities, and community agents to adequately manage medicines and commodities, especially antimalarials, and to promote their rational use.

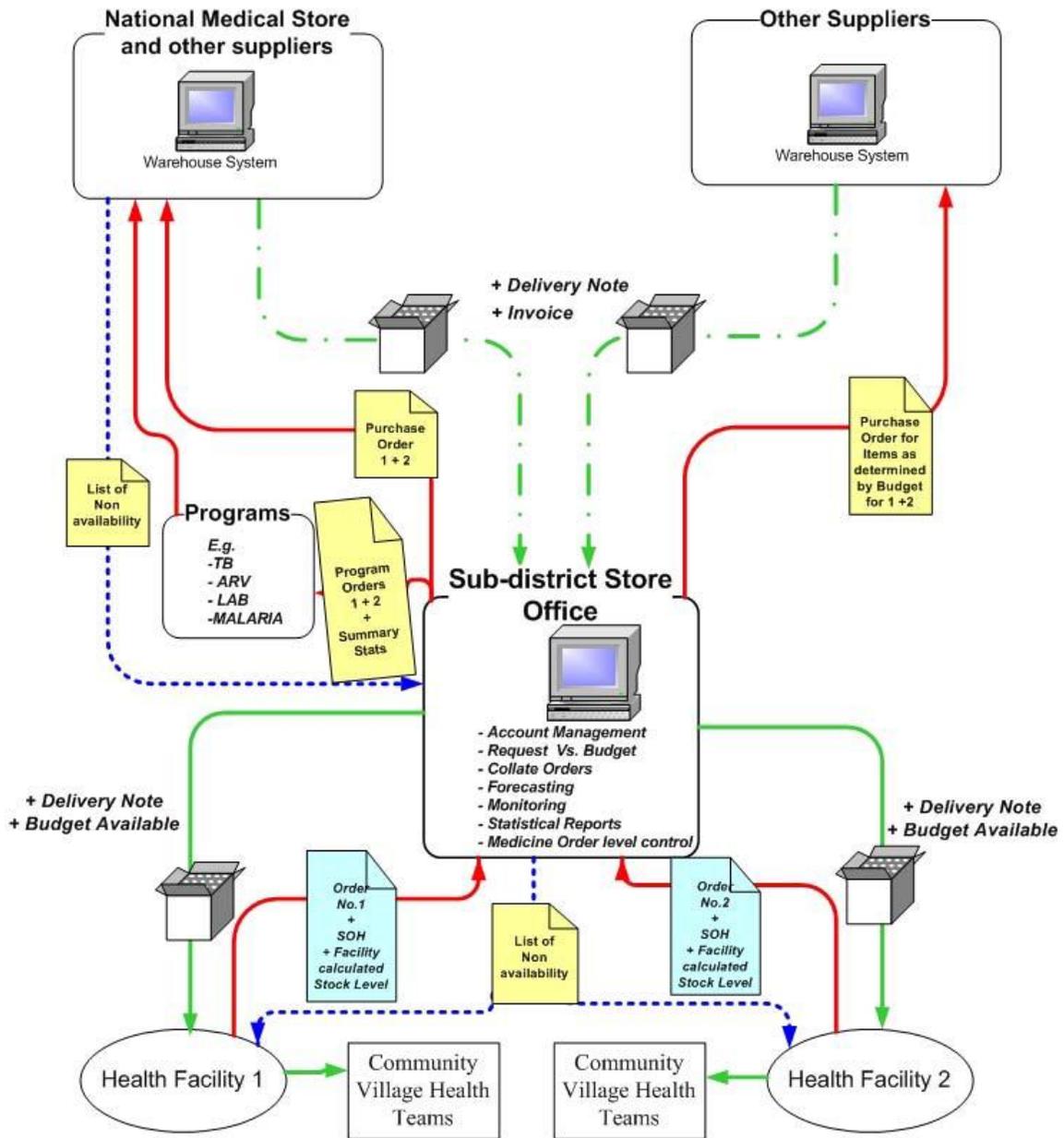
Major Activities/Accomplishments

- Strengthened the capacity of the National Medical Stores (NMS) to manage and distribute antimalarials. SPS helped by updating standard operating procedures for picking and packing medicines and for processing sales orders, developing job aids, and improving communication with health facilities to increase timeliness and quality of ordering. In addition, SPS helped streamline business processes to solve storage and distribution bottlenecks and to establish a system for monitoring and improving inventory management performance.
- Strengthened quantification capacity for ACTs and other medicines. SPS helped establish and train a national-level quantification committee whose purpose is to coordinate malaria quantification exercises and document the methodology. SPS also assisted with the development of draft guidelines and quantification procedures for antimalarials at the national level. SPS supported the quantification of rapid diagnostic tests in anticipation for their rollout in Uganda and also supported the quantification of products necessary for the management of severe malaria.
- Strengthened pharmaceutical management and supervision using the monitoring-training-planning approach. SPS established facility-level pharmaceutical management operating procedures related to storing, receiving, and estimating orders for antimalarials. A capacity-building plan was developed and implemented resulting in a national cadre of 24 trainers. The core training was complemented with training on the monitoring-training-planning approach, which places training tools and responsibility in the hands of local staff and

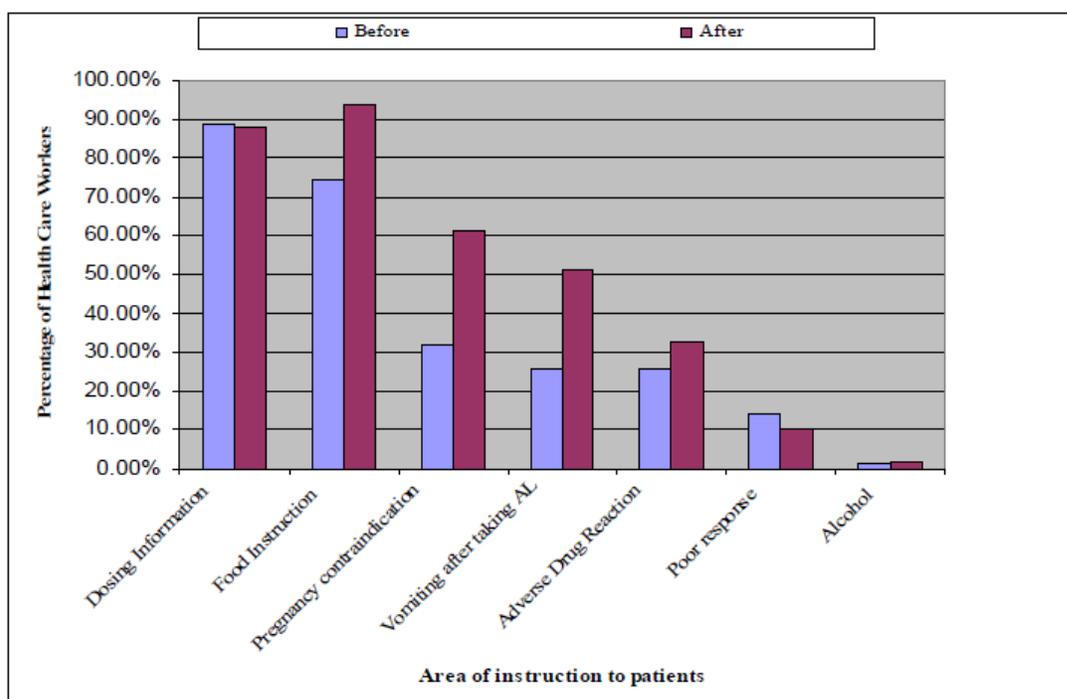
empowers its users to take immediate action in response to a problem. A total of 289 health workers were trained from eight districts including 56 staff members that were equipped with supportive supervision skills. The approach yielded tangible results; for example, the percent of facilities maintaining records for issued medicines went up from 15% to 100% in Adjumani district, and the percent of facilities with updated stock cards improved from 18% to 100% in Moyo.

- Supported home-based management of fever program in two districts. SPS simplified its pharmaceutical management training program and standard operating procedures to make it appropriate for community medicine distributors. The program established a cadre of trainers amongst implementing partners to expand the cascade training to community-based distributors in their respective program areas.
- Supported strategy to increase access to antimalarials through the private sector. SPS provided support to the Ministry of Health's Private Sector Task Force and other partners to develop strategies to improve ACT access in the private sector; for example, SPS helped develop the supply chain strategy for the Medicines for Malaria Venture pilot study on ACTs and helped develop a guidance document related to promoting ACTs in the private sector
- Strengthened rational use of ACTs at facility and community levels. SPS helped develop ACT dispensing job aids for health facilities and community medicine dispensers to promote proper dispensing, counseling, and rational use of medicines. As the chart below shows, after incorporating the job aids into their daily tasks, health workers became more knowledgeable on how to dispense artemether/lumefantrine and provided better instruction to patients.
- Supported the development of a pharmaceutical management information system to help monitor ACTs in district health offices. SPS worked with stakeholders to identify system data needs. Subsequently, SPS analyzed the Uganda system including identifying the product ordering cycle for key health products and assessing current tools, data flows, and capacities. Based on this, SPS developed a conceptual model for the suggested sub-district product order flow and held a stakeholders meeting to present the model and obtain feedback. (See figure below.)

Suggested Sub-District Product Order Flow



Proportion of health workers giving instructions before and after incorporating job aids



- Helped develop a performance monitoring plan and monitoring methodology for malaria commodities. To monitor availability of antimalarials at country level, SPS implemented the quarterly Procurement Planning and Monitoring Report for Malaria. Data served as an advocacy tool to mobilize donors to make emergency procurements when necessary to avert stock outs. SPS also implemented the PMI pharmaceutical system strengthening tool to measure the status of the country's overall pharmaceutical system.

Key Tools and Publications

- *Promoting ACTs in the Ugandan Private Sector: Pharmaceutical Management Issues and Conceptual Framework*
- Inventory management assessment of the National Medical Stores
- *The Malaria Medicine Quantification Team—A Proposed Initiative for the National Malaria Control Program*, Ministry of Health, Uganda
- *Quantification for Medicines for Severe Malaria in Uganda*
- Job aids for ACT dispensing

Collaborating Organizations

- Uganda's National Malaria Control Program
- National Medical Stores
- National Drug Authority
- Pharmacy Division of the Ministry of Health

- Resource Center of the Ministry of Health
- Joint Medical Stores
- Makerere University

South Africa

2007–2012

Funding Leader: \$14,516.522 / Associate: \$8,108.875

Background

In addition to continuing to build on health systems improvements with the dissemination of tools, approaches, and best practices for the effective delivery of pharmaceutical services, a primary challenge for the South African SPS Program was to support the US government's provision of antiretrovirals (ARVs) as part of the significant expansion of the HIV/AIDS treatment program. This involved enhanced support in the areas of quantification and forecasting, supply planning, budgeting and financial planning, pharmaceutical management information systems, clinical training, monitoring and evaluation, and the registration of medicines. There was an urgent need to monitor and track ordering patterns, stock levels, consumption, expenditures, prescribing trends and medicine use data from the central level through the provincial level and down to the patient. Ultimately, the objective was to support the development of a sustainable health system and increase access to quality antiretroviral therapy (ART) services.

In preparation for the implementation of a national health insurance system, the National Department of Health (NDoH) emphasized improving facilities and their quality of services. To this end, the government created an Office of Standards Compliance to promote the attainment of high quality standards.

The technical objectives of the SPS South Africa program were as follows—

- Improve governance in the pharmaceutical sector through advocacy and the development and implementation of appropriate systems
- Strengthen pharmaceutical management systems by developing solutions and sustainable capacity for the implementation of best practices in quantification, procurement, inventory control, distribution and use of pharmaceuticals
- Promote appropriate use of medicines and patient safety and contain the emergence of antimicrobial resistance by implementing selected interventions and strengthening Pharmaceutical and Therapeutics Committees (PTC) and infection control programs
- Expand access to essential medicines through advocacy for policy changes, support for public/private partnership initiatives, and introduction and deployment of electronic tools to ensure availability of essential medicines

Major Activities/Accomplishments

Improving governance in the pharmaceutical sector

- Finalized a report on the provinces' legislative compliance relating to the supply of medicine and submitted it to the NDoH, provinces, and metros.
- Helped four provinces draft and update standard operating procedures to support the provision of various pharmaceutical services.

- Developed a policy in the Western Cape for pharmacist's assistants working under indirect supervision of a pharmacist at primary health clinics to provide pharmaceutical services. The policy was approved by the District Executive Committee and facilitated the scale-up of ART using a nurse-driven, doctor-supported model, as well as the down-referral of patients on ARVs to clinics.
- Provided assistance to the South African Pharmacy Council (SAPC) to draft amendments and addenda to the Good Pharmacy Practice rules published in terms of Section 35A of the Pharmacy Act 53 of 1974.
- Provided assistance to the KwaZulu-Natal Provincial Health Department with the development of a model and setting up of a facility for the dispensing of all chronic prescriptions in the province with the possibility that the function could be outsourced. The pilot was implemented with patients from RK Kahn and Prince Myosheni Hospitals.
- Helped revise the scope of practice and minimum standards of pharmacy support personnel and developed a new scope of practice for two categories of mid-level worker (pharmacist's assistant and pharmacy technician). The new scope was subsequently adopted by the Pharmacy Council.
- Helped the SAPC research activity times, costing of pharmaceutical services, and pharmacy staffing. The final outcome was the publication in terms of the Pharmacy Act 53 of 1974 of Rules relating to the services which may be provided by a pharmacist and guidelines for levying such a fee or fees.
- Established the Clinical Resource Centre in the Northern Cape and trained personnel. The center is still fully functional and managed by the province.
- Provided technical assistance to the Medicines Control Council regarding the regulation of medicines and clinical trials. Guidelines for evaluating clinical trials with vaginal microbicides for preventing HIV transmission were developed.
- Helped the Office of Standards Compliance revise the Core Standards for Health Establishments in South Africa; served on the reference group tasked with revision of the standards and development of the assessment tools as well as field testing.

Strengthening pharmaceutical and laboratory management systems to support public health services

- Conducted an assessment of prevention of mother to child transmission (PMTCT) services at 23 service points in the Southern Region of Ekurhuleni Metro and identified areas requiring further attention and support; developed a training course to cover PMTCT services.
- Provided assistance in the Eastern Cape and KwaZulu-Natal to develop a results-based monitoring and evaluation plan for pharmaceutical services; collected and reviewed data
- Developed an integrated computerized medicine supply management suite (RxSolution) for use at facility level; adapted it to meet new requirements developed over 100 management report templates.
- Adapted the HIV and AIDS course initially developed in collaboration with Makerere University to incorporate TB treatment and PMTCT guidelines and customize it to the South African environment. The course was accredited by the SAPC.

Containing the emergence and spread of antimicrobial resistance

- Assisted the NDoH in promoting rational use of medicine by strengthening provincial, district, and institutional PTCs, training staff, providing technical assistance in formulary development and use, medicine safety, and pharmacovigilance. The PTC course was accredited by the SAPC; developed a set of indicators to monitor the functionality of a PTC at various levels.
- Introduced SPS's infection control assessment tool in South Africa in 2007; implemented the tool in pilot hospitals, conducted introductory and implementation review workshops and training-of-trainers workshops; rolled out the tool to other areas. These activities led to notable qualitative and measurable improvements in the areas of intervention. The national partners assumed ownership of the tool and approach and are now taking a leading role in coordinating its scale up; assisted NDoH in the development of the national infection prevention and control manual and the national plan. A full time position is now included in the NDoH organization.
- Helped KwaZulu-Natal implement focused surveillance activities at ART sites; trained staff and implemented adverse drug reaction monitoring and reporting activities at 14 identified sentinel surveillance sites; developed and implemented reporting tools and data handling and management systems and provided support for data analysis and assessment of reports received in response to ART regimen changes.

Expanding access to essential medicines

- Worked with the NDoH, Supply Chain Management System, and Clinton Health Access Initiative in supporting the US government's ARV procurement, including determining ARV stock levels, selecting and quantifying products, and convening quantification and information workshops with counterparts.
- Developed quantification models for HIV/AIDS and TB; assisted the NDoH and provinces with the quantification of ARVs and PMTCT and TB medicines.
- Participated in the World Health Organization (WHO) joint TB country review conducted in KwaZulu-Natal to review the situation of the TB burden in four districts and assess achievements in TB control.
- Collaborated with the Pharmacy School at the Nelson Mandela Metropolitan University in the Eastern Cape to conduct lectures on pharmacy law and ethics and medicines supply management and pharmacovigilance. SPS contributed to 57 new pharmacy graduates entering the pharmacy profession.

Summary of training under SPS in all 9 provinces: 1 July 2007 to September 2012

Training Course	Number of participants trained
Adherence to ART	895
Computerized systems (Use of RxSolution)	656
Ethics/legislation	266
Infection control	730
Monitoring and evaluation	858
Medicines supply management	2,481
Medicines supply management for TB	1,129
Pharmacovigilance	1,450
Pharmaceutical leadership and development	299
PMTCT	531
PTC management and rational drug use	997
Quantification	325
HIV and AIDS management	2,273
Total	12,890

Key Tools

- **ARV Adherence to Treatment Assessment Tool.** The adherence tool developed by SPS is included in the NDoH's national ART guidelines.
- **RxSolution**, an integrated computerized medicines supply management system installed at sites in South Africa, Swaziland, Lesotho, Haiti, and Uganda.
- **Indicator-Based Pharmacovigilance Assessment Tool (IPAT)**, developed as a comprehensive performance metric system to assess pharmacovigilance and medicine safety activities specifically within pharmaceutical companies.
- **Infection Control Assessment Tool (ICAT).** Adopted as national tool for assessing infection control practices in facilities.

Conference Presentations

Global Health Council 2008

- Improving hospital infection control, South Africa and Swaziland (Poster)

WHO First Global Symposium on Health Systems Research 2010

- Development of a Framework to Monitor Pharmaceutical Services in KwaZulu-Natal, South Africa (poster);
- Centralising the Dispensing of Chronic Medicine in KwaZulu-Natal, South Africa to Improve Access and Quality of Care (poster);
- Quantifying the Services for which Pharmacists may Levy a Fee in South Africa (poster).

3rd International Conference for Improving Use of Medicines 2011

- Application of an ABC Analysis in the Prevention of Antimicrobial Resistance in Tuberculosis Treatment (poster);
- Improving Access to Oncology Treatment in a Resource Constrained Setting Using Pharmacoeconomic Analysis (oral);
- Application of the Antacid (A02 class) ATC Review to Achieve Formulary Cost Effectiveness (poster);
- Evaluating the Effectiveness of TB Medicines Supply Management Training in the Western Cape Province, South Africa (poster);
- Investigating Medical Supply as a Rate Limiting Step in the Scale-Up of Isoniazid preventive Therapy in KwaZulu-Natal Province, South Africa (poster);
- Application of an International Reference Price List to National Medicines Procurement Tenders (oral).

Federation of Infectious Diseases Societies of Southern Africa (FIDSSA) 2011

- Improving Infection Control Through Hand Hygiene Audits at Tygerberg Academic Hospital (poster; abstract also published in Southern African Journal of Epidemiology and Infection, 2011)

IAS 2012

- Long-term Adherence to Co-trimoxazole Prophylactic Therapy in Adult HIV- positive Patients in South Africa (poster)
- Analysing Savings From the 2010 South African Antiretroviral Tender: Did Increased Volumes or Reference Pricing Play a Role? (poster)
- Barriers to Adherence to Co-trimoxazole Preventive Therapy in Adult HIV Patients (poster)
- Reasons for Missed Doses in Patients under Low Pill Burden, Long-term Co-trimoxazole Preventive Therapy (poster)
- A Medicines Use Evaluation of Tenofovir in the South African Antiretroviral Programme (poster)
- Monitoring Adverse Drug Reactions to Determine the Rate of Antiretroviral Regimen Switches at a Provincial Hospital, North West Province, South Africa

Asia Pacific Conference on National Medicinal Policies 2012

- The South African Methodological Approach to Developing the Essential Medicines List and Standard Treatment Guidelines (poster)
- Use of Consumption Data in the Prevention of Antimicrobial Resistance in Tuberculosis Treatment (poster)
- The Methodology of Developing a Regulated Logistics Fee to Manage the Supply Chain Aspects of Medicines Prices in South Africa (poster)
- Role of National Medicines Policies in Maintaining Product Quality (oral)

Collaborating Organizations

- National Department of Health (various units)
- Pharmaceutical services units of all provincial health departments
- South African Pharmacy Council
- Nelson Mandela Metropolitan University, Eastern Cape Province
- North West University, North West Province
- Harvard University
- University of Washington
- World Health Organization
- South Africa Medical Research Council
- Clinton Health Access Initiative
- Supply Chain Management Systems project
- SA Medicines Control Council
- University of Pretoria
- University of Limpopo
- University of KwaZulu-Natal
- Integrated Primary Health Care Project
- Ecumenical Pharmaceutical Network

Acknowledgements

We would like to acknowledge and thank the National Department of Health, Departments of Health of the provinces and metros, the management and staff of health facilities, as well as our other partners for their co-operation, collaboration and support in our combined efforts to make a sustainable difference and to build a robust health system in order to improve the health status of the people of South Africa.

**South America Infectious Disease Initiative
2007–2011
Funding: \$351,000**

Background

In response to the growing challenge of antimicrobial resistance, the USAID Bureau for the Latin America and Caribbean Region launched the South American Infectious Disease Initiative (SAIDI) with an emphasis on preventing the emergence of multidrug-resistant tuberculosis (MDR-TB). MSH’s SPS Program was a partner starting in 2007. Since 2010, SAIDI partners focused on a holistic and participatory approach in controlling MDR-TB in the Peruvian region of Madre de Dios in the Amazon Basin. This region has the highest rates of MDR-TB in Peru. The most vulnerable population is artisanal gold miners living in remote temporary camps without access to health services.

Major Activities/Accomplishments

- Supported the certification of DISA Callao warehouse in good storage practices (Peru)
- Established and strengthened a network of drug information centers (Peru and Paraguay).
- Developed and conducted communication campaigns targeting prescribers, dispensers, and patients (Peru and Paraguay).
- Improved facility-level management of first-line TB medicines, including the development of pharmaceutical management guidelines for primary health facilities (Peru and Bolivia).
- Improved storage conditions and supported the introduction of good storage practices in Madre de Dios, Peru
- Proposed an alternative model for the provision of TB services to the populations working and living in Madre de Dios mining areas.



Key Tools and Publications

- Ministerio de Salud, 2012. *Guía de manejo de medicamentos antituberculosis en centros y puestos de salud.*
- Espinoza, H. 2011. *Buenas prácticas de almacenamiento de medicamentos y dispositivos médicos.* Preparado por el Programa Strengthening Pharmaceutical Systems (SPS) de Management Science for Health (MSH) y Links Media, LLC. para la Agencia de los Estados Unidos para el Desarrollo Internacional (USAID) bajo la Iniciativa Amazónica contra la Malaria.
- Amazon Malaria Initiative (2010) success story. Handle with pride: Callao medical warehouse earns best storage practice certification.

Collaborating Organizations

Besides SPS, SAIDI international partners included the US Pharmacopeia's Drug Quality Information Program, Links Media, the US Centers for Disease Control and Prevention, and the Pan-American Health Organization's Infectious Disease Division.

South Sudan
2007–2012
Funding: \$6,200,000

Background

South Sudan is a post-conflict country that had its health system devastated by decades of civil war. The disease burden is considerable, with malaria accounting for 24.7% of health facility attendance. The pharmaceutical sector is characterized by lack of or weak enforcement of policy, laws, regulations, and guidelines. Availability of essential medicines is compromised by poor procurement planning, limited storage capacity at all levels and erratic pull-based supply system. Other weaknesses include the lack of a national logistics management information system; uncoordinated donations and parallel supply chains; lack of transportation means; poor pharmaceutical waste disposal practices; and irrational use of medicines.

The SPS Program aimed to strengthen the capacity of the Ministry of Health (MOH) National Malaria Control Program, the Pharmaceutical Services Directorate, and later the Expanded Program on Immunization (EPI) Department, to effectively plan, coordinate scale-up, and document the impact of cost-effective interventions. The technical objectives were to—

- Strengthen the capacity of the Malaria Control Program to effectively plan, coordinate and document control and prevention interventions in line with national Roll Back Malaria strategic plan
- Strengthen pharmaceutical management systems to improve availability and promote the effective management of medicines and supplies for malaria
- Strengthen the capacity of the EPI program to effectively plan, coordinate, and document program coverage and performance

Major Activities/Accomplishments

- Helped develop critical strategic and operational plans to guide health policy implementation including the malaria strategic plan; pharmaceutical sector 3-year master plan; South Sudan Development Plan (2011–2013); Health Sector Development Plan (2012–2016); and EPI micro-plans for states and counties.
- Helped draft two successful Global Fund proposals and procurement and supply management plans that mobilized a total of about \$170 million for malaria programming.
- Supported development of human resource capacity through training (both workshop-type and on-job), supportive supervision, internships and coaching/ mentorship. Over the life of the project, more than 1,000 health workers were trained in malaria, pharmaceutical, and EPI service management.
- Played a key role in finalizing two bills for regulation of pharmaceutical premises, products, processes, and personnel.
- Created coordination mechanisms, including forum for engagement of stakeholders through set-up and support for operations of technical working groups for the three areas supported by SPS. These working groups have been instrumental in generating consensus, coordinating implementation, and disseminating MOH expectations from partners.

- Organized and supported pharmaceutical benchmarking study tours to Ethiopia, Uganda and Tanzania, to provide MOH officials with exposure to similar settings and establish linkages for future collaboration.
- Provided technical assistance in distribution planning and coordination of logistics for delivery of essential medicines and medical supplies to counties and health facilities, with particular focus on artemisinin-based combination therapies (ACTs) and rapid diagnostic tests (RDTs). SPS coordinated the distribution of over 3.5 million ACT treatments procured through USAID and multi-donor trust fund.
- Helped the government draft guidelines and application forms for verification of imports of pharmaceuticals into Southern Sudan
- Supported MOH to draft a *Malaria and Pharmaceutical Management Training Manual* for private sector pharmacy personnel focusing on new malaria treatment guidelines and rational use of medicines.
- Helped quantify national requirements for essential medicines, equipment, and medical supplies including performing a gap analysis for ACTs and RDTs; compiled data for ABC/VEN analysis for Juba Teaching Hospital.
- Drafted a concept paper on the process of developing a national logistics design system.
- Worked with the Central Medical Stores on the quarterly MOH kit distribution planning and documentation; coordinated distribution of medicines at state, county, and lower levels, which included reviewing consumption data, making allocations, and coordinating partners to collect the medicines from the state medical stores.
- Coordinated and conducted joint pharmaceutical management supportive supervision visits in all the states in Southern Sudan. On-site support was provided to health personal in stores management and use of LMIS tools.
- Supported MOH to develop tools and job aids for the different levels of the logistics system; disseminated tools through trainings conducted by SPS and other in-country partners.
- Strengthened the MOH's monitoring and evaluation systems through contribution to the monitoring and evaluation framework, selection of appropriate indicators, and conducting or contributing to several pharmaceutical sector assessments, including the 2010 countrywide assessment.
- Revised standard operating procedures (SOPs)-related materials for pharmaceutical management training and organized training for over 1000 participants.
- Developed tools and conducted rational use assessments in hospitals, trained health workers on rational medicine use, and established one Drug and Therapeutic Committee at Juba Teaching Hospital.
- Strengthened the quality assurance framework by developing relevant guidelines and tools, and instituting import control measures and inspections of pharmaceutical premises and by establishing one Minilab® site at Kaya point of entry. The minilab testing facility at Kaya has minimized the flow of unregulated products from Uganda.
- Developed SOPs and supportive supervision tools for minilabs for document review, visual inspection, sampling and development, and a checklist for supportive supervision and monthly reporting forms; trained personnel on SOPs and tools.
- Supported the roll-out of the ACT-based malaria treatment policy from policy change through procurement, capacity building, and transition to the fixed-dose combination ACT; trained 105 health workers in malaria case management based on the new malaria treatment

policy; helped MOH manage more than 3.7 million ACT courses of treatment donated by USAID.

- Helped the Malaria Control Program develop a tool and collect data from partners on the number of insecticide-treated nets (ITNs) planned for distribution in 2008 by state and counties; provided guidance in weekly ITN campaign coordination committee meetings that resulted in refined plans and tools for the distribution of one million ITNs.
- Assisted the planning of and carried out the first ever malaria indicator survey in 2009, which provides critical information on malaria situation in the country.
- Helped MOH draft an implementation guide for home management of malaria, diarrhea, and pneumonia.
- Drafted the immunization coverage survey guidelines for South Sudan.
- Supported national preparatory activities, including developing field guidelines for measles follow-up supplemental immunization activities in Unity, Upper Nile, Warrap, Western, and Northern Bahr El Ghazaal states.
- Organized training of trainers in immunization practice for over 200 vaccinators.
- Collaborated with Sudan Health Transformation Project-II to conduct a feasibility study on the introduction of misoprostol for postpartum hemorrhage and provided input on policy, supply, and logistics considerations; served on the technical working group to design a pilot for the post partum hemorrhage control program.

Key Tools and Publications

- Updated long-lasting insecticide treated net national strategy
- Concept paper on surveillance of malaria indicators
- Management information system concept paper
- Tool for tracking status of pharmaceutical procurements
- SOPs for Central Medical Stores—receiving, storage, and issuing of pharmaceuticals
- Guidelines for registration and issuance of licenses
- Training manual for orienting private pharmacy sales assistants
- Guidelines for verification of imports of pharmaceuticals into Southern Sudan
- Guidelines for drug registration
- Child survival implementation guide
- Guideline for malaria epidemic preparedness and response
- *Strategic Approach for Coordinated Strengthening of Pharmaceutical Management in Southern Sudan*
- SOPs for document review, physical inspection, and Minilab® testing protocol
- Pharmaceutical Indicator Assessment tool
- Proposed immunization schedule for Southern Sudan
- Malaria and pharmaceutical sections of *Health Sector Strategic Plan*
- Pharmaceutical assessment report
- Draft pharmaceutical master plan
- RDU assessment report
- Immunization practice handbook for vaccinators

Collaborating Organizations

- Population Services International
- Malaria Consortium
- World Health Organization
- United Children’s Fund
- United Nations Development Programme
- Sudan Health Transformation Project-I (SHTP-I), implemented by John Snow Inc.
- Sudan Health Transformation Project-II (SHTP-II), implemented by MSH
- Euro Health Group
- Pharmaciens Sans Frontiers
- Supply Chain Management Systems
- Crown Agents
- Catholic Diocese of Torit
- American Refugees Council
- Sudan Health Association
- AAH-I
- Mundri Relief & Development Agency
- Pharmaceutical Society of South Sudan
- Ministry of Health, State Ministries of Health, and County Health Departments

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The success of the SPS Program is mainly down to the enormous support accorded by the local USAID Mission, government partners, and the excellent relationship with the MOH, health facilities, and nongovernmental and private institutions— they all deserve special thanks for their continued support and cooperation.

Swaziland
2007–2011
Funding: \$4,175,000

Background

The SPS Program was initially asked to support the pharmaceutical supply management inventory system for antiretrovirals (ARVs) in Swaziland after the Global Fund required that the country put in place an appropriate inventory management system to manage ARVs procured through the Fund.

SPS objectives in Swaziland were to—

- Improve pharmaceutical policy and regulation
- Build capacity of human resources for health to perform pharmaceutical functions and services
- Improve laboratory commodities management and build capacity of laboratory staff on supply management
- Design and implement interventions to improve medicines use
- Improve availability of patient care information to monitor treatment outcomes

Major Activities/Accomplishments

- Provided technical assistance to the central medical stores ARV warehouse in monitoring ARVs supplies and availability, which led to improvements in the ARV supply situation.
- Implemented the quantification tool, Quantimed[®], and supply planning tool, Pipeline[®], to better forecast ARV needs in the country.
- Developed standard operating procedures for the central medical stores, antiretroviral therapy (ART) sites, hospitals, and clinics.
- Implemented RxSolution software for inventory management at the central medical stores, laboratory warehouse, and health facilities; provided maintenance and support.
- Contributed in the development of the national task-shifting implementation framework. The goal of this document is to improve universal access to quality health services at all levels of care and advocates for the establishment of a pharmacy assistant cadre to support pharmaceutical services.
- Refurbished nine regional warehouses including supplying new equipment to improve storage and dispensing infrastructure to in support of the rapid scale-up of HIV treatment.
- Helped make the tendering and procurement system more cost-effective and efficient, which was recognized by Global Fund and other partners.
- Worked with United Nations Population Fund to establish the first Supply Chain Technical Working Group to coordinate, mobilize resources and utilization, and monitor the supply chain; served as the secretariat of this group.
- Strengthened laboratory commodity management by—
 - Developing standard operating procedures.
 - Providing continuous training for laboratory personnel.
 - Providing shelving and air-conditioners for laboratories.

- Procuring computers and network for the electronic (RxSolution) stock management system at 14 laboratories.
- Redesigned the electronic patient medical records tool to a real-time database, RxPMIS and added a tuberculosis module.
- Implemented a manual ARV logistics inventory management tool for facilities without an electronic system, which has increased timely submission of reports.
- Provided technical guidance in the introduction of fixed-dosage ARV preparations for pediatric HIV patients.
- Helped develop the national standard treatment guidelines and essential medicines list
- Developed training manual for pharmaceutical management in HIV/AIDS programs.
- Developed standard operating procedures for pharmaceutical services at health facilities
- Established Pharmacy & Therapeutic Committees at six health facilities; supplied them with medical reference materials.
- Strengthened medicines policy by developing the Pharmacy Bill 2012 (repeal the Pharmacy Act of 1929), the Medicines & Related Substances Control Bill 2012, and the National Pharmacy Policy 2nd edition.
- Procured a Minilab[®] for quality testing medicines at the central medical stores.

Key Tools and Publications

- Patient management database software
- Pharmaceutical standard operating procedures for facilities
- Pharmaceutical standard operating procedures for central medical stores
- Standard Treatment Guidelines and Essential Medicines List for most common conditions in the Kingdom of Swaziland
- Pharmaceutical Policy 2nd edition
- Adverse drug reaction reporting form
- Training curriculum for pharmacy assistants (Certificate in Pharmacy Assistant)
- Logistics management information system forms for the ART and reproductive health programs

Collaborating Organizations

- Clinton Health Access Initiative
- National Emergency Response Council for HIV&AIDS (NERCHA)
- Stop TB Partnership
- University Research Council LLC
- Médecins Sans Frontières
- Elizabeth Glaser Pediatric AIDS Foundation
- ICAP Columbia University
- PATH
- World Health Organization
- United Nations Population Fund
- Southern Africa Nazarene University, Faculty of Health Sciences
- Nazarene Health Institutions

- John Snow Inc. (Enhancing Strategic Information project)
- University of Swaziland
- Association of Public Health Laboratories
- Crown Agents

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Tuberculosis
2007–2012
Funding: \$5,817,000

Background

Despite greater support than previous years from partners and donors alike, including the Global Fund for AIDS, Tuberculosis, and Malaria, the Global Drug Facility (GDF), and the Green Light Committee (GLC), the Millennium Development tuberculosis (TB) goals for increased case detection and reduced prevalence by 2015 are not likely to be met by most countries. With medicines and commodities being an integral part of TB control, attention must continue to focus on TB pharmaceutical management components to ensure that medicines are available when patients need them and that these medicines are used rationally. Through the RPM Plus Program, the TB team developed pharmaceutical management tools; facilitated national, regional, and country workshops on TB pharmaceutical management; provided technical assistance to international and local partners; and become a dependable source of expertise in the area of TB pharmaceutical management. The SPS Program continued to build on these activities to strengthen TB pharmaceutical systems. SPS technical objectives addressed the pharmaceutical management component of the USAID Tuberculosis Program Results Pathway and the Global Plan to Stop TB 2006–2015.

The SPS Program provided technical assistance in TB pharmaceutical management at global, regional, and country levels and assigned pharmaceutical management experts to work at GDF/GLC headquarters from 2001–2008 and 2009–2010. Additionally, SPS experts co-authored World Health Organization (WHO) Stop TB publications including those on the use of TB fixed-dose combination drugs, conducted the annual monitoring missions in countries to evaluate their pharmaceutical management capacity for managing first- and second-line TB drugs, and prepared materials and facilitation of training workshops for GDF consultants, among others.

Major Activities/Accomplishments

Public-private mix

- Collaborated with the national TB and leprosy programs (NTLPs) in Tanzania, Kenya, and Pakistan to develop public-private mix coalitions for the prevention of multidrug resistant (MDR)-TB.
- In Tanzania, SPS completed a baseline situation analysis of retail pharmaceutical sector-pharmacies and accredited drug dispensing outlets in Morogoro region and Dar es Salaam
- In Kenya, SPS finalized development, printing and distribution of public-private mix and work place policies and standard operating procedures (SOPs).
- In Pakistan, SPS hired a local pharmaceutical management and TB consultant to conduct a baseline assessment on drug-resistant TB situational analysis and opportunities for enhanced public-private mix.

Better tools

- Revised and adapted an MSH-developed indicator-based drug utilization review tool *Guidelines for Implementing DUR Program in Hospitals* to incorporate TB-specific content. The tool outlines an implementation approach for promoting and ensuring rational use of medicines and prevention of the development of antimicrobial resistance.
- Developed e-TB Manager[®], a comprehensive electronic web-based tool for programmatic management of TB and drug resistant TB—
 - Aligned the tool with the latest WHO recommendations for TB, programmatic management of drug-resistant, and pediatric TB.
 - Implemented e-TB manager in 12 countries (Armenia, Azerbaijan, Bangladesh, Brazil, Georgia, Kenya, Moldova, Namibia, Philippines, Romania, Ukraine, Uzbekistan) and technical assistance was provided to each country for specific customization of the tool; the system has been implemented with different modules (e.g. case management, medicine management, data management) and is in various phases of implementation in each of the countries.
 - Developed and customized comprehensive user's guides, SOPs, training materials and a web-based project management and bug-tracking tool to support implementation teams as well as training of local staff on information technology issues and use of the tool, supporting knowledge transfer strategy for e-TB manager implementation.
 - Began development of the desktop application version of e-TB manager for countries without nationwide broadband Internet access.
 - Developed and piloted a comprehensive laboratory module in cooperation with WHO as part of the full system and system integration with other TB/DRTB diagnostic devices and DUR under development.

MDR-TB

In conjunction with the GDF/GLC, conducted an annual workshop each year from 2007–2011 at the UNION World Health Conference on Lung Health on a variety of issues surrounding TB drug management. Over the course of 5 years, over 275 participants from national TB programs, essential medicines offices, nongovernmental organizations, and donors attended the workshop.

TB–HIV/AIDS

- Worked with national TB and HIV programs to initiate field tests of *Managing Pharmaceuticals for TB/HIV Program Collaboration: A Planning Guide* in Kenya, Zambia, Malawi, and Rwanda.
- Finalized and disseminated *Managing Pharmaceuticals for TB/HIV Program Collaboration: A Planning Guide*. The guide was developed for countries aiming to establish or strengthen their TB/HIV collaborative activities.
- Conducted a regional workshop on TB/HIV pharmaceutical management in Nairobi Kenya. Representatives from six countries participated, with each country developing a plan based on identified challenges, available resources and feasibility for implementation to improve management and supply of TB/HIV medicines.

Capacity building

- Collaborated with WHO and Stop TB, to conduct the first Africa regional conference on pharmaceutical management in Johannesburg, South Africa from July 19–21, 2011—
 - Approximately 120 delegates from over 25 countries in Africa attended the conference to share ideas and experiences about challenges and interventions to improving TB medicine and supply management, use, and safety.
 - The conference output was a recommendations for action document which was derived from break-out discussion groups and which received participant consensus as the way forward for the region to improve TB pharmaceutical management activities.
- Collaborated with US Pharmacopeial Convention/Promoting the Quality of Medicines to develop a joint regional training course titled “Joint Regional Workshop for Pharmaceutical Management and Quality Assurance for TB and MDR-TB Medicines” in Laos, June 20–24, 2011.
- Facilitated regional pharmaceutical management workshops as well as country-specific capacity building exercises in the mixed form of trainings and hands-on technical assistance in conjunction with the GDF/GLC, TB TEAM, and WHO regional offices.
- Responded to GLC requests for targeted technical assistance to a number of countries that experienced bottlenecks and managerial crises in their DOTS Plus programs.
- Conducted a retrospective study to understand the evolution of countries’ TB pharmaceutical systems related to international donor support and systems strengthening as promoted by the GDF through its various activities over 2001–2010—
 - This study covered 24 countries representing 76% (13.8 million) of the 18.1 million patients treated through support from the GDF. A key finding of the study was that 82% (854) of the recommendations related to TB program’s pharmaceutical management practices were verified as completed of the 1,047 program recommendations that were made to the 24 countries.
 - The SPS program’s analysis and report of the GDF’s made a strong argument that GDF is a unique organization that has made a huge contribution to TB control around the world over a ten year period. This report was widely used by key Stop TB partners including board members to verify the usefulness of the GDF.

Key Tools and Publications

- Strengthening Pharmaceutical Systems. 2011. *Impact of Donor Support on TB Pharmaceutical Systems: The Global Drug Facility Experience*. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.
- Konduri N. Moore T. *Impact of Donor Support on TB Pharmaceutical Systems: The Global Drug Facility Experience*. Oral presentation at the 42nd Union World Conference on Lung Health, Lille, France. October 27, 2011.
- Stakeholder engagement guide
- Assessment Guide for TB/HIV Collaboration for Pharmaceutical Management
- e-TB Manager

- Quantification tool for laboratory diagnostic commodities
- Guidelines for Implementing DUR Program in the Hospitals

Collaborating Organizations

- Global Drug Facility
- Green Light Committee
- National TB and HIV programs in Kenya, Zambia, Malawi, and Rwanda
- World Health Organization, Geneva and regional offices
- Stop TB Partnership
- The United States Pharmacopeial Convention
- National TB and Leprosy Programs in Tanzania, Kenya, and Pakistan
- TB TEAM
- Kenya Associated for Prevention of TB and Lung Diseases

Acknowledgements

SPS's successes were due in large part to the important collaborations that served as a foundation for technical activities over the life of the project. Key partnerships included those with international bodies like the Stop TB Partnership, as well as national nongovernmental organizations such as Kenya Associated for Prevention of TB and Lung Diseases in Nairobi. Last, important strides would not have been possible without the support of the national tuberculosis programs in many of the countries in which SPS operated.

**West Africa Regional Portfolio
2007–2008
Funding: \$600,000**

Background

SPS and its predecessor, RPM Plus, collaborated with USAID/West Africa implementing partners and local partners and stakeholders to implement interventions to strengthen pharmaceutical management systems in the West Africa region. This included conducting assessments to inform system strengthening interventions, and providing technical assistance to strengthen the pharmaceutical management training capacity of regional institutions.

Specific technical objectives were to—

- Strengthen national pharmaceutical supply management systems to ensure availability and appropriate use of essential public health commodities
- Improve quality and quantity of human resources capable of performing pharmaceutical management functions and services in West Africa

Major Activities/Accomplishments

- Conducted a rapid evaluation and analysis of 14 key procurement and supply chain management system indicators in Cameroun; drafted and disseminated English and French versions of the evaluation report to the Cameroun Ministry of Health (MOH). The results informed the development of appropriate interventions to address identified gaps and improve availability and use of essential public health commodities.
- Continued an effort initiated under RPM Plus to set up the West Africa Regional Technical Resource Collaboration, with four academic institutions— Kwame Nkrumah University of Science and Technology /Ghana; Ghana Institute of Management and Public Administration; University of Jos /Nigeria, and University of Liberia, and with two regional Francophone training institutions, Centre Africain des Etudes Supérieures en Gestion /Senegal and Institut Régional de Santé Publique/Benin. The goal of the effort was to foster a regional network of academic institutions to build capacity and develop skills for management of medicines and other commodities used for HIV/AIDS, tuberculosis, malaria, maternal and child health, and other programs in West Africa.
- Supported CESAG/Senegal and IRSP/Benin to organize a regional pharmaceutical management training of trainers workshop in Benin with key MOH representatives from seven francophone countries; helped the Liberia Ministry of Health and Social Services and University of Liberia to conduct a similar training for pharmacists of the public health sector followed by training on the quantification of antimalarials and related commodities; trained a total of 68 health professionals from 15 institutions through training of trainer workshops/seminars.
- Helped IRSP/Benin develop and disseminate a supervision tool for management of medicines and health commodities in countries of the Abidjan-Lagos Corridor.

Key Tools and Publications

- Strengthening Pharmaceutical Systems (SPS). 2009. Supervision Tool for Management of Pharmaceutical Products and Medical Supplies in the Countries of the Abidjan-Lagos Corridor. Submitted to the U.S. Agency for International Development by the Strengthening Pharmaceutical Systems (SPS) Program. Arlington, VA: Management Sciences for Health.

Collaborating Organizations

- Centre for Advanced Studies in Management (Centre Africain des Etudes Supérieures en Gestion) Senegal
- Ghana Institute of Management and Public Administration
- JSI/MEASURE Evaluation Project, Ghana
- Kwame Nkrumah University of Science and Technology, Ghana
- Ministry of Health, Cameroon
- Ministry of Health, Ghana
- Ministry of Health and Social Services, Liberia
- Ministry of Health/National Essential Medicines and Medical Supplies Store (Centrale Nationale d'Approvisionnement en Médicaments et Consommables Médicaux Essentiels), Cameroon
- Regional Institute of Public Health (Institut Régional de Santé Publique), Benin
- University of Jos, Nigeria
- University of Liberia
- West Africa Health Organization

Acknowledgements

We would like to acknowledge and thank USAID/West Africa Regional Mission, the ministries of health, health institutions, academic institutions, and other national and local organizations in Benin, Burkina Faso, Cameroon, Chad, Cote D'Ivoire, Ghana, Liberia, Niger, Nigeria, Senegal, Togo and elsewhere in West Africa, in addition to collaborating organizations that may not have been mentioned above.

Ukraine

2009–2010

Funding Leader: \$512,350/Associate:\$1,900,000

Background

With USAID Europe and Eurasia funding, SPS held a regional workshop on e-TB Manager, which is a web-based tool to strengthen TB programs. Representatives of the Ukrainian Ministry of Health (MOH) were among the 17 workshop participants. This meeting was followed by a pre-implementation planning and technical needs assessment to better understand their needs vis-à-vis e-TB Manager.

The focus in Ukraine was to develop, validate, and test a country-specific version of the tool. SPS received FY09 field funding from the USAID/Ukraine Mission to implement e-TB Manager in Ukraine to improve access to and reporting on information on case and commodity management. In addition to strengthening TB information systems, SPS initiated other pharmaceutical management activities aimed at improving rational use for TB medicines.

The SPS technical objectives for Ukraine were the following—

- Strengthen the national TB program by improving its access to and use of quality information related to TB case and commodity management
- Contain the emergence and spread of antimicrobial resistance to TB medicines

Major Activities/Accomplishments

- Worked with the National TB Center to develop a framework and conduct an evaluation of site implementation readiness at the oblast level. We used this information to identify and prioritize groups of oblasts that may be ready for e-TB Manager. SPS also supported the development of roll-out plans in target oblasts including trainings, resource mobilization, and tool application.
- Adapted the e-TB Manager which provided Ukrainian language access at national, oblast, and raion levels, with inputs from the TB Center and counterparts from five pilot oblasts.
- In conjunction with the National TB Center, trained participants from nine oblasts in the use of e-TB Manager. Participants from five oblasts, trained in collaboration with PATH, began entering live data into the system in August 2010, while the second group of four oblasts started data entry in November 2010.
- With the TB Center, identified several “super-users” who were trained to participate in regional trainings for additional oblasts and to provide feedback on system operations
- Coordinated with other partners who were providing technical or financial support to the Ukrainian TB Program, including the World Health Organization (WHO), PATH, the Rinat Akhmetov Foundation for the Development of Ukraine, and Medicins sans Frontiere.
- To help standardize treatment approaches, worked with the MOH to publish new standard treatment guidelines for drug resistant TB. To complement training conducted by PATH, SPS collaborated with the National Committee on HIV and other Socially Dangerous Diseases, the National Academy of Postgraduate Medical Education, and the Medical School

in Donetsk to conduct training on diagnosis and treatment of multidrug-resistant (MDR)-TB for 10 additional oblasts.

- Provided technical assistance in collaboration with the WHO, to draft a protocol for conducting a study of physician adherence to national TB standard treatment guidelines and availability of appropriate medicines.
- Provided technical assistance in pharmaceutical management in an external evaluation of the National TB Program to help develop the next five-year plan for 2012 through 2017. Various international implementing organizations, WHO, and MOH units took part in the evaluation.

Key Tools and Publications

- User and training-of trainer materials (draft) for the e-TB Manager in Ukraine (English and Ukrainian)
- *Review of the National TB Programme in Ukraine; October 10-22, 2010*
- Training materials on MDR-TB (Ukrainian, Russian)

Collaborating Organizations

- The All Ukrainian Center for Tuberculosis Control (TB Center)
- The National Committee on HIV and other Socially Dangerous Diseases
- PATH, who helped implement the DOTS strategy in Ukraine
- Mediciens sans Frontiere
- WHO
- Medical School in Donetsk
- National Academy of Postgraduate Medical Education
- Rinat Akhmetov Foundation for Development of Ukraine who has a Stop TB program including a DOTS Plus treatment project in the Donetsk oblast and who is the Principal Recipient for the Round 9 Global Fund TB proposal

Acknowledgements

We would like to acknowledge and express our thanks to the USAID/Ukraine Mission, Ukrainian Ministry of Health, TB Center, and the National Committee on HIV and other Socially Dangerous Diseases. We are also grateful for the collaborative efforts and support of PATH/Ukraine, as well as the various local government agencies that were partners in our Ukraine activities, in addition to collaborating organizations that may not have been mentioned above.

**USAID/East Africa
2007–2009
Funding: \$181,000**

Background

SPS Program provided technical support to the member states of the East, Central and Southern Africa Health Community (ECSA), (formerly Commonwealth Regional Health Community Secretariat) to strengthen commodity management systems and improve access to high-quality pharmaceuticals and other health commodities. It covered the entire spectrum of commodity management, from policy formulation and pooled procurement to human and institutional capacity building in distribution and use. The overall guiding objectives were to enhance regional capacity to improve health systems and improve accessibility to HIV/AIDS commodities.

The technical objectives for the program's Regional Pharmaceutical Forum, a major component of this effort, were to—

- Develop and advocate for the implementation of enabling pharmaceutical policies for efficient commodity management systems to increase access to public health commodities in the ECSA region
- Increase the capacity for providing effective pharmaceutical management within health delivery institutions and systems in the ECSA region
- Apply proven commodity management tools aimed at strengthening the pharmaceutical systems of countries in the ECSA region
- Document and disseminate strategic pharmaceutical management information and better practices within ECSA region

Major Activities/Accomplishments

- Sustained advocacy for pharmaceutical agenda including policy development and implementation (e.g., presentation to the Directors of Health and Health Ministers annual conferences; development of a generic national medicines policy).
- Built human resources capacity for pharmaceutical management including conducting a national quantification exercise for Kenya. The pre-service curriculum for ART drug management was implemented in five countries.
- Sourced strategic information by assessing of the performance of pharmaceutical management systems in ECSA member states.
- Promoted rational use of medicines by introducing AMR containment into the *Regional Pharmaceutical Strategy 2009 – 2012*.
- Developed regional, harmonized standard treatment guidelines for HIV/AIDS, tuberculosis, and malaria and a regional formulary to provide unbiased information to clinicians.

Key Tools and Publications

- *Regional Pharmaceutical Strategy 2009 – 2012*

- *Generic Medicines Policy for ECSA, 2007*
- *Generic Medicines Policy Implementation Plan for ECSA, 2007*
- *Guidelines for Management of HIV, AIDS, TB and Malaria, 2007*
- *Model formulary for HIV AIDS, TB and Malaria, 2007*
- *Pharmaceutical Management in Support of ART: A Pre-Service Curriculum*
- *Antimicrobial Resistance: The Need for Action in the East, Central and South African Region*
- *Report of the Assessment of the Performance of Pharmaceutical Management System in ECSA Countries (2005 & 2008)*
- *Technical Report of the Regional Pharmaceutical Forum Meeting on Antimicrobial Resistance; April 28-30 2008. Kampala*
- Pharmacovigilance unit for inclusion in ANECCA's "Curriculum for Comprehensive Paediatric HIV/AIDS Care for Health Workers in Africa."
- *Call-to-Action for Antimicrobial Resistance Advocacy and Containment*

Collaborating Organizations

- East, Central & Southern Africa Health Community Secretariat
- Regional Pharmaceutical Forum
- Departments of pharmacy, drug regulatory authorities and procurement agencies of ministries of health in 11 ECSA countries
- JSI | DELIVER
- Regional Center for Quality of Health Care
- USAID EA Missions in Kenya, Malawi, South Africa, Zambia
- Drug regulatory authorities in the East African Community

Acknowledgements

The establishment of the Regional Pharmaceutical Forum would not have progressed without the support of the ECSA Secretariat, and specifically the Health Systems Development Program. There was substantial support from the Directors Joint Consultative Committee and the Health Ministers' Conference, who supported presentations by and on the Regional Pharmaceutical Forum each year.

**USAID–US Food and Drug Administration (USFDA) Interagency Agreement
2010–2011
Funding: \$185,550**

Background

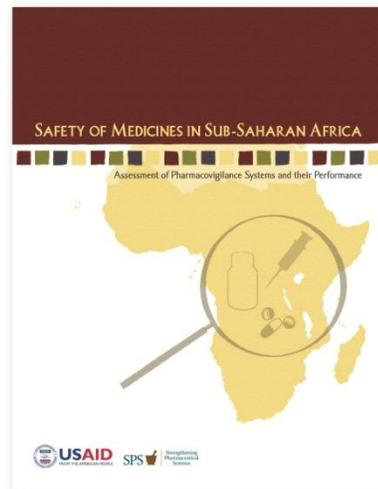
In 2009, the SPS Program published a seminal paper on a [systems approach to strengthening pharmacovigilance in developing countries](#) and highlighted the importance of strong surveillance and adverse event reporting systems. The SPS Program also developed the indicator-based pharmacovigilance assessment tool for the systematic and longitudinal monitoring of a country's capacity and performance in ensuring the safety and effectiveness of health products.

An interagency agreement between USAID and USFDA proposed to assess pharmacovigilance systems in sub-Saharan African countries and identify opportunities to strengthen those systems. The assessment had sub-Saharan Africa the following objectives—

- Provide a comprehensive description and analysis of national pharmacovigilance systems in selected African countries with a specific focus on capacity and performance
- Identify replicable and successful experiences to further enhance pharmacovigilance systems and classify countries based on performance
- Map out how donor agencies and global health efforts are contributing to pharmacovigilance and analyze the strategies employed by global and regional initiatives supporting pharmacovigilance in Africa
- Recommend options for enhancing pharmacovigilance system capacity and performance

Major Activities/Accomplishments

- Conducted an assessment of pharmacovigilance systems in 46 sub-Saharan African countries and published the report, *Safety of Medicines in sub-Saharan Africa: Assessment of Pharmacovigilance Systems and their Performance*.
- Summarized country situations and provided them to the countries that participated in the in-depth assessment.
- Developed a draft of priority tools to address gaps identified from the assessment.
- Disseminated the assessment through electronic and print publication and through poster presentations at three international conferences.
- Developed an inventory of key documents and resources on pharmacovigilance systems in Africa.



Key Tools and Publications

- *Safety of Medicines in sub-Saharan Africa: Assessment of Pharmacovigilance Systems and their Performance*

- Matrix of tools additional to the WHO PV Toolkit for strengthening pharmacovigilance systems in Africa
- News articles titled “Africa struggles to improve drug safety” in the *Canadian Medical Association Journal*
- Findings presented at the WHO/USAID Pharmacovigilance Consultants Meeting 2012 in Harare, Zimbabwe
- Findings presented at the ISPE's 28th International Conference on Pharmacoepidemiology and Therapeutic Risk Management in August 2012 in Barcelona, Spain
- Findings presented at the Second Global Symposium on Health Systems Research in November 2012 in Beijing, China

Collaborating Organizations

- National regulatory authorities from 46 sub-Saharan African countries
- University of Washington, Global Medicines Program

Acknowledgements

- World Health Organization, Geneva
- US Pharmacopeia, Promoting the Quality of Medicines
- WHO/African Partnerships for Patient Safety
- African Union-NEPAD Planning and Coordinating Agency, African Medicines Registration Harmonisation
- WHO Collaborating Centre for Advocacy and Training in Pharmacovigilance, Accra, Ghana

Vietnam
2009–2012
Funding: \$1,087,500

Background

The Ministry of Health (MOH) and other key stakeholders in Vietnam are strengthening the pharmacovigilance system in their country. The National Drug Information and Adverse Drug Reaction (DI & ADR) Center was established at the Hanoi University of Pharmacy (HUP) in 2009, which was a major step; however, a 2009 World Health Organization (WHO)-supported national capacity assessment highlighted several gaps relating to pharmacovigilance. The SPS Program collaborated with national stakeholders to address these issues, particularly focusing on activities that strengthen broader pharmacovigilance systems.

SPS also provided technical support in laboratory leadership and management by collaborating with Vietnam's National Tuberculosis Control Program and other stakeholders to help strengthen their system for referring, reporting, and transporting tuberculosis (TB) laboratory specimens for diagnosis and management of multidrug-resistant TB.

Major Activities/Accomplishments

- Worked with the DI & ADR Center to help develop a pharmacovigilance curriculum for in-service training and with HUP's Clinical Pharmacy Department to develop pharmacovigilance curriculum for pre-service training at the postgraduate pharmacy level; developed two versions of a detailed instructor's guide.
- Collaborated with WHO and the University of Bordeaux (France) to provide technical support to MOH/HUP/DI&ADR Center to conduct a training workshop on strengthening the network for safety of medicines and pharmacovigilance.
- Trained the DI & ADR Center staff on drug information and helped develop standard operating procedures and question-answer forms for the drug information service; supported the revision of the adverse drug reaction spontaneous reporting form, which is now being used in the country.
- Worked with Vietnam Administration of AIDS Control and HUP to develop and finalize a framework and protocol for sentinel site-based pilot active surveillance within the antiretroviral therapy (ART) program; supported the implementation of the protocol by conducting training-of-trainers on active surveillance pharmacovigilance and developed active surveillance protocol guides and standard operating procedures; helped develop an Access-based tool to capture information on adverse events reported by patients at the ART sentinel sites and a national active surveillance database for use at the DI & ADR Center. After the program was implemented by the sites, SPS assisted with monitoring visits at all the sites.
- Collaborated with WHO to provide technical assistance to national counterparts in conceptualizing and developing a pharmacovigilance component in the Global Fund Round 10 application, which was successful.
- Collaborated with the National TB Control Program and the National TB Reference Laboratory to strengthen mechanisms and systems for referral, reporting, and transport of TB

laboratory specimens for diagnosis and management of multidrug resistant (MDR)-TB. Accomplishments included—

- Initial situational assessment and development of a system-strengthening plan.
- Identification of seven pilot sites in collaboration with TB program.
- Collection of baseline data for specimen referral system from the seven pilot sites.
- Development and official publication of standard operating procedures on the referral system in the TB control program guideline book.
- Trained national TB program and pilot site staff on procedures and programmatic management of MDR-TB implementation and referral system.
- Contracted with a private courier system to transport specimens from the sites to two labs to start a functional referral system.
- Conducted supervision and monitoring visits with TB program staff and relating to the lab specimen referral system.

The seven pilot sites are currently implementing the new system.

Key Tools and Publications

- *Sentinel site-based active surveillance for safety of antiretroviral medicines (SSASSA) (2011)*
– Access-based tool to help capture information on adverse events reported by patients at ART sentinel sites
- *Data collation and analysis tool (DCAT) (2011)* – national active surveillance database for use at the DI & ADR Center

Collaborating Organizations

- World Health Organization
- US Centers for Disease Control and Prevention
- University of Washington
- Supply Chain Management System (SCMS) project
- TBCARE 1

Acknowledgements

We would like to acknowledge and thank the DI & ADR Center, Vietnam Administration of AIDS Control, National TB Control Program, National TB Reference Laboratory, and other government agencies, ART facilities, in addition to collaborating organizations that may not have been mentioned above.