SIAPS Bangladesh
End of Project Report

March 2018

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About SIAPS

The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to ensure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

Recommended Citation

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CONTENTS

ACRONYMS AND ABBREVIATIONS

ADE	adverse drug event
ADRAC	Adverse Drug Reaction Advisory Committee
ADRM	adverse drug reaction monitoring
DGDA	Directorate General of Drug Administration
DGFP	Directorate General of Family Planning
DGHS	Directorate General of Health Services
eLMIS	electronic logistics management information system
FP	family planning
HPNSDP	Health, Population, and Nutrition Sector Development Program
MNCH	maternal, newborn, and child health
MOHFW	Ministry of Health and Family Welfare
MSH	Management Sciences for Health
NTP	National TB Program
PLMC	Procurement and Logistics Management Cell
PSM	procurement and supply management
PV	pharmacovigilance
SCMP	Supply Chain Management Portal
SDP	service delivery point
SHL	Square Hospital Limited
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOP	standard operating procedure
TB	tuberculosis
USAID	US Agency for International Development
WHO	World Health Organization

BUILDING RESILIENT PHARMACEUTICAL SYSTEMS IN BANGLADESH

Introduction

In 2011, the US Agency for International Development (USAID)-funded Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program, implemented by Management Sciences for Health (MSH), started working in Bangladesh to improve the availability of quality medicines and effective pharmaceutical services to ultimately improve health outcomes. SIAPS was implemented in 46 countries around the world.

SIAPS Initiatives

SIAPS followed the "Theory of Change"—that is, a specific methodology for planning, participation, and evaluation used in the private, nonprofit, and government sectors to promote social change. For SIAPS, these changes came with a focus on system strengthening and capacity building. SIAPS took important steps toward systems strengthening in the health sector in Bangladesh, including:

- Employing a pharmaceutical system strengthening approach in line with the World Health Organization's (WHO) health systems strengthening model

- Strengthening pharmaceutical regulatory systems

- Maximizing the efficiency of procurement and distribution processes for contraceptives and essential medicines

- Strengthening information systems to address the data gap and facilitate evidence-based decision making

- Building institutional and individual capacity

SIAPS' Pharmaceutical Systems Strengthening Approach

To build resilient and sustainable health systems, SIAPS followed and promoted a comprehensive pharmaceutical systems strengthening approach that involved establishing mechanisms to collect information and make evidence-based decisions that were aligned with a country's strategic plan and USAID's global strategic vision. To accomplish this, SIAPS collaborated with stakeholders to build local institutional and human capacity and foster country leadership. To build institutional capacity, SIAPS introduced embedded, highly skilled technical advisors in the Ministry of Health and Family Welfare (MOHFW) and other entities, including some at the subnational level. This model of collaboration for capacity building in each of these institutions aimed to institutionalize the new systems and coordinate work methods to achieve targets.
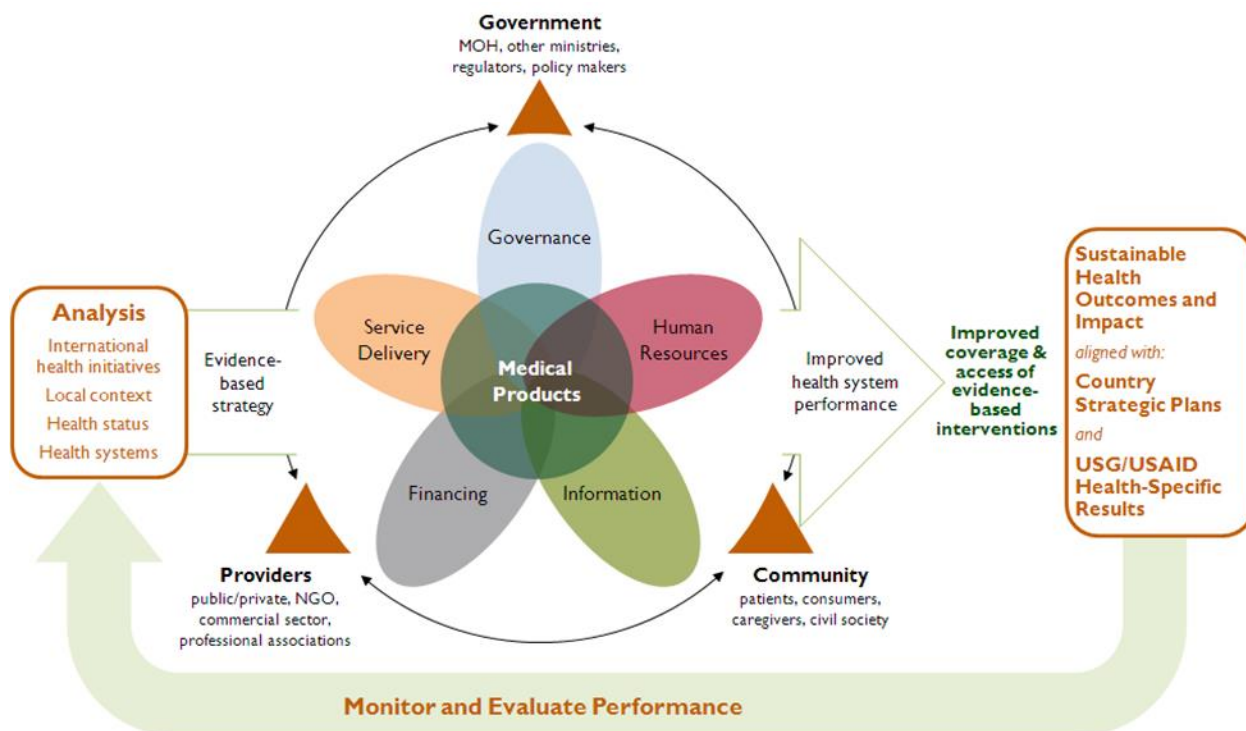
Figure 1. The SIAPS framework for pharmaceutical systems strengthening

SIAPS Partners

SIAPS worked in partnership with the MOHFW in Bangladesh. Directorates under the MOHFW that collaborated with and benefited from SIAPS included:

- The Procurement and Logistics Management Cell (PLMC) under the MOHFW
- The Directorate General of Family Planning (DGFP)
- The Directorate General of Health Services (DGHS)
  - Central Medical Stores Depot
  - National Tuberculosis Control Program (NTP)
- The Directorate General of Drug Administration (DGDA)

AREAS OF IMPACT

Strengthening Supply Chain Management Systems of the MOHFW and Procuring Entities

Ensuring the availability of quality medicines and lifesaving commodities requires a responsive national supply chain system. SIAPS provided technical assistance to improve the responsiveness of the MOHFW and its key directorates' supply chains and focused on strengthening procurement and logistics supply management.
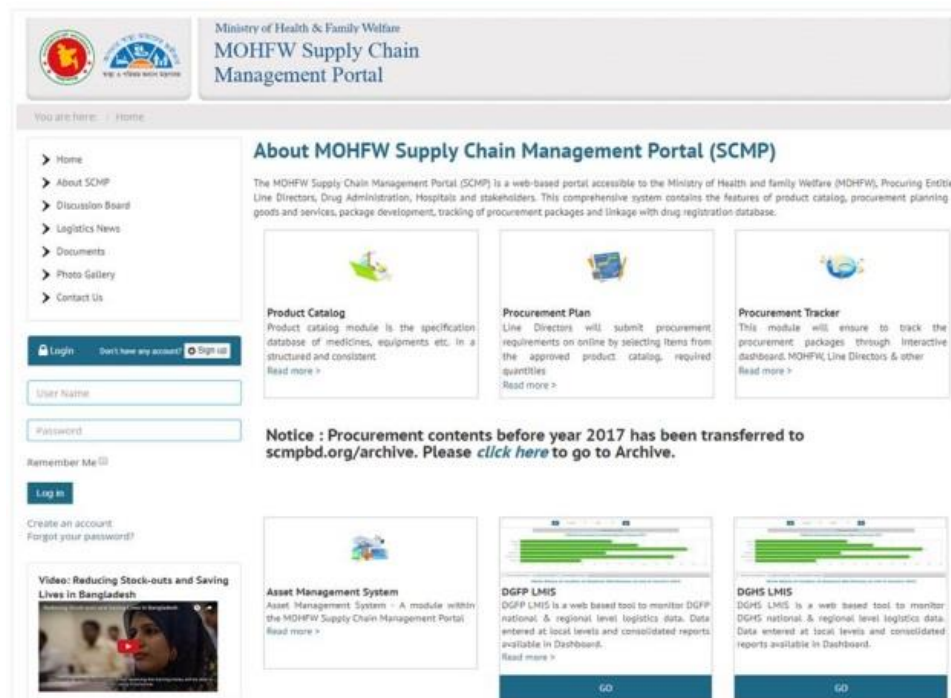
Figure 2. The Supply Chain Management Portal

Reinforcing Stewardship in the MOHFW to Improve Procurement and Supply Management Functions

SIAPS played an instrumental role in establishing the PLMC within the MOHFW under its five-year Health, Population, and Nutrition Sector Development Program (HPNSDP, 2011–2016) to improve oversight and coordination of procurement and supply management (PSM) functions and capacity building efforts within its key procuring entities. Under the leadership of the PLMC, all 32 MOHFW line directors developed and submitted procurement plans for fiscal years 2013–2014, 2014–2015, and 2015–2016 through the SIAPS-developed electronic Supply Chain Management Portal (SCMP, https://scmpbd.org/). To build country ownership and sustainability of the SCMP, SIAPS handed over all necessary SCMP technical documents to the PLMC, transferred the mother server to the DGHS data center, and trained designated MOHFW officials to keep the system operational without external support.

Improving Coordination Mechanisms for Better Forecasting and Supply Planning

In addition to the PLMC, SIAPS also helped establish different coordination bodies involving high-level government officials and representatives from development partners to strengthen procurement and supply management functions, including the Forecasting Working Group/DGFP, Logistics Coordination Forum/DGFP, and Supply Chain Coordination Forum/Central Medical Stores Depot. As a result, the procurement lead time for the DGFP and DGHS decreased significantly. With easier and planned forecasting, the DGHS procurement lead time decreased from 78 to 52 weeks. Primary care providers and upazila leadership saw a 66% decrease in time spent reporting. For the DGFP, the procurement lead time decreased from 78 to 33 weeks (SIAPS, 2016).

> The midterm review of the HPNSDP acknowledged the SCMP as a "game changer" in improving procurement and supply chain efficiency.

Developing Guidelines to Streamline Procurement and Supply Processes

Throughout the life of the program, SIAPS helped develop and revise a number of guidelines, including:

- DGFP procurement procedures manual
- Procurement operations manual for MOHFW
- Standard framework agreement for procurement
- Subnational procurement guidelines
- Pricing guide for medical products
- Condemnation guidelines
- Table of equipment for 10-, 20-, 50-, 250-, and 500-bed hospitals
- Specification of core medical equipment
- DGFP supply manual (6th edition)

> "This excellent module not only enables us to compile and update SDP stock data accurately and easily, but allows managers to respond quickly and efficiently to avoid potential stock-outs of FP commodities."
> – **Golam Md. Azom**, *Deputy Director, Family Planning, and a master trainer of the SDP dashboard module*

Results by the Numbers

- No stock-outs of contraceptives at the national level since September 2011

- The stock-out rate at 29,000 service delivery points (SDPs) stayed below 2% starting in June 2015

- An estimated 708,000 cubic feet of storage space recovered through an accelerated condemnation process

ESTABLISHING SYSTEMS FOR EVIDENCE-BASED DECISION MAKING

Having necessary and reliable health data available at every level of the health system contributes to better decision making, which ultimately leads to better health outcomes.

Improving Availability of Quality Data

SIAPS worked with the DGFP to implement an effective electronic logistics management information system (eLMIS) that collects data on consumption and availability of family planning (FP) commodities from the national to the SDP level. Between February 2013 and November 2017, direct uploading of on time logistics data to the web-based eLMIS increased from 49% to 100%, facilitating national-level forecasting and supply planning and allowing managers to respond quickly and efficiently to avoid stock-outs and overstock of FP commodities. The DGFP logistics management system had four primary tiers: a central warehouse; regional warehouses; upazila stores; and SDPs, characterized principally as upazila health centers, unions, and wards (Johnson, et. al., 2016).

In the NTP, SIAPS introduced QuanTB, an electronic forecasting, quantification, and early warning tool. Using this tool, the NTP PSM working group quantified the projected amount of tuberculosis (TB) medicines required for the upcoming year and was able to take immediate steps to eliminate unnecessary medicine waste and ensure continued availability of those medicines. SIAPS similarly provided assistance to the NTP to develop a TB warehouse inventory management system that helped improve inventory-related data at the central TB warehouse.

> "With the technical assistance from SIAPS a web portal for supply chain management (SCMP) has been established. It has greatly helped to make procurement and overall work fast paced, efficient and transparent".
> – ***Kazi Mustafa Sarwar***, Director General, Directorate General of Family Planning, Ministry of Health and Family Welfare (MoHFW)

Establishing eLMIS in DGHS Logistics Management

To ensure uninterrupted availability of priority maternal, newborn, and child health (MNCH) medicines, SIAPS worked with the DGHS to establish and implement an eLMIS in selected districts. Prior to this, there was neither a paper-based system nor a standard eLMIS in the DGHS to track the availability of priority MNCH commodities. Users at the implementation sites are increasingly using this electronic tool for reporting. As the eLMIS data for MNCH commodities are accessible and visible, the DGHS can utilize this platform to promote real-time collaboration and strengthen its feedback mechanism to detect and mitigate impending stock-related emergencies.

Figure 3. The DGHS eLMIS dashboard of Supply Chain Management Portal

Introducing an Asset Management System in the Public Health Sector of Bangladesh

Although the MOHFW procures a large amount of medical and nonmedical equipment, including IT equipment, every year, there was no systematic and cost-effective process for deploying, operating, maintaining, upgrading, and disposing of those assets. In 2016, SIAPS developed and completed a pilot implementation of an asset management system that manages assets in different health facilities from the registering stage to decommissioning. The system also analyzes asset-related data and generates an interactive dashboard that decision makers can use to bring more transparency and economy to the overall management of assets under the MOHFW.
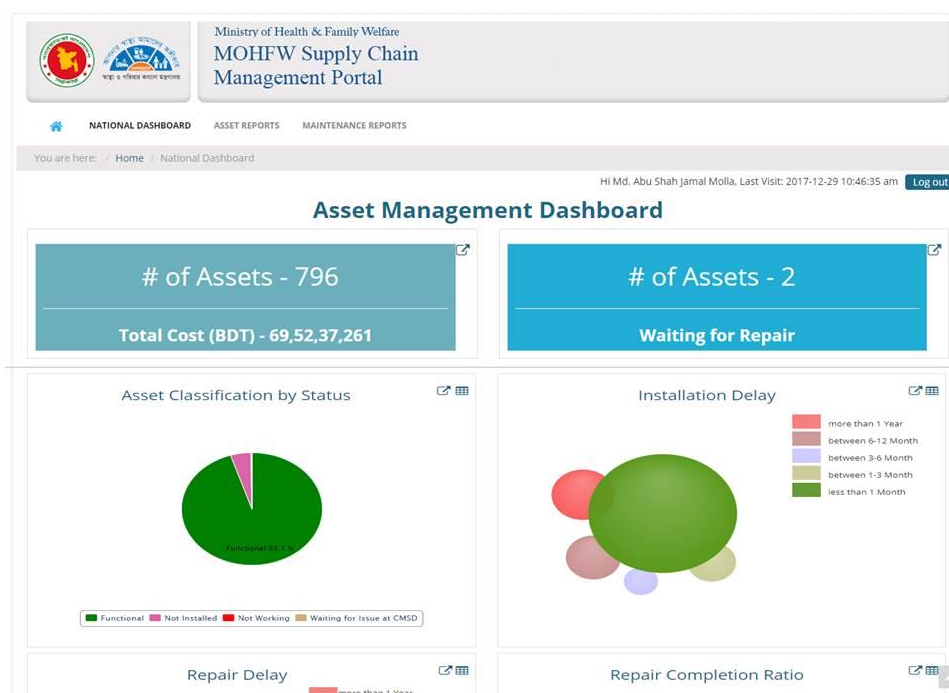
**Figure 4. The asset management dashboard of the
Supply Chain Management Portal**

Results by the Numbers

- More than 29,000 SDPs tracked to ensure the availability of FP commodities

- A 94% reporting rate on 25 lifesaving MNCH commodities was achieved by 3,043 sites in 14 districts

- An electronic TB reporting tool captured individual information of approximately 300,000 TB patients

- A savings of USD 6.38 million was realized through improved quantification of FP/reproductive health, MNCH, and TB commodities

- The MOHFW achieved the Disbursement Linked Indicators with its pilot program in Moulabhibazar, which paved the way for the World Bank to release USD 10 million to the Government of Bangladesh. This activity was then rolled out to three additional district hospitals at Sirajganj, Manikganj, and Jhenaidah. In total, 875 pieces of equipment worth BDT 73 were registered.

STRENGTHENING PHARMACEUTICAL REGULATORY SYSTEMS

Revitalizing National Pharmacovigilance Program

To ensure medicine safety, SIAPS provided technical support to the DGDA to revive the national pharmacovigilance (PV) program and establish an Adverse Drug Reaction Monitoring (ADRM) Cell. SIAPS also helped the DGDA develop PV guidelines; tools; and information, education, and communication training materials to support an adverse drug event (ADE) reporting system. With a functional PV program, Bangladesh became the 120th member of WHO's International Drug Monitoring Center in 2014.

"SIAPS is the battery that activated DGDA's cells. Thanks to SIAPS that the DGDA was finally able to make the ADRM Cell fully operational and Bangladesh could achieve this great recognition." – *Salim Barami, Former Head of the ADRM Cell, DGDA*

Introducing an Online Medicine Registration System through Pharmadex

To improve the efficiency of the country's medicine registration process, SIAPS supported the DGDA to introduce Pharmadex (http://pharmadexbd.org/), an online medicine registration system, in May 2017. Pharmadex facilitates the submission, review, and evaluation of medicine registration applications and dossiers on the basis of international standards and formats. SIAPS developed user manuals for both applicants and the DGDA, built capacity for regulatory authority and marketing authorization holders, and supported the DGDA in adopting SOPs on the Common Technical Document format (modules 1–3) to ensure that the dossiers submitted to the DGDA online meet international standards.

Developing a Five-year Strategic Plan

To support the DGDA in becoming a functional national regulatory authority, SIAPS took the lead in developing a five-year strategic plan (2017–2021) in collaboration with WHO, the Bill & Melinda Gates Foundation, the US Pharmacopeial Convention's Promoting the Quality of Medicines Program, the International Vaccine Institute, and the World Bank.

Results by the Numbers

The DGDA received more than 1,800 ADE reports, which were reviewed by the ADRM Cell and the Adverse Drug Reaction Advisory Committee (ADRAC) and uploaded to the WHO database.

Building Local Institutional and Human Capacity

To build the capacity of the MOHFW and its directorates, SIAPS undertook different approaches, including developing master trainers within the implementing entity to train on SIAPS-developed

systems and procedures; introducing post-training action plans at the end of logistics training workshop with follow-up through supportive supervision; mentoring; and providing outsourced training by engaging local and international institutions and international consultants.

On-the-job training for storekeepers on logistics management

Results by the Numbers

- More than 22,000 MOHFW officials and nongovernmental officials were trained to build resilient pharmaceutical systems

- Master trainers and troubleshooters within entities were identified and trained

"This is the best training I received in my life" *— **Rubel Hawlader,** store keeper of DRS, Madaripur, while attending Basic Logistics Management Training*

Logistics training for DGFP field workers

SUCCESS STORIES

Service Delivery Point—An Arm to Reach Out to the Community

With the national implementation of the SDP dashboard roll-out, DGFP officials could view stock information and monitor the nearly 30,000 SDPs across the country; easily track stock on hand and average monthly consumption of supplies; and map out potential vacant positions for appropriate human resource planning and decision making on stock replenishment. Transparency and efficiency of the FP commodity tracking system has radically enhanced the performance of individual SDPs.

Working with the DGFP, SIAPS rolled out the SDP dashboard module in June 2015, gradually covering 488 subdistricts. This roll-out, including the development of 72 master trainers and the enormous task of training 971 DGFP staff (82% male, 18% female) was completed on June 11, 2015. There was much excitement among DGFP officials that using this module could help ensure a continuous supply of FP commodities at last mile delivery, thereby safeguarding women and children's lives by allowing women to safely delay and limit pregnancies.

Reducing Newborn and Child Deaths through Public-Private Partnerships—Khulna Shishu Hospital

Tama, a resident of Parokhali village in Khulna district, was devastated when her 15-day-old daughter was diagnosed with pneumonia-related complications and needed treatment, including immediate oxygen support. Following the instructions of the local doctor, she and her husband rushed the newborn eight kilometers to Khulna Shishu (Children's) Hospital and had her admitted. Thanks to the newly installed oxygen supply system at the hospital, baby Sangita received a steady flow of medical oxygen and recovered.

Newborn receiving oxygen therapy at Khulna Shishu Hospital

To address the challenge of a lack of oxygen supply, SIAPS commissioned a central oxygen supply mechanism within the hospital area to strengthen the hospital's newborn and child health service delivery systems. SIAPS also helped the hospital develop its staff capacity, introduced a health information system for evidence-based decision making, and strengthened its medicine warehousing system. Such collaboration paved the way for SIAPS to build a successful public-private partnership that had the potential to speed up progress toward ending preventable child and maternal deaths.

Inauguration of the oxygen plant at Khulna Shishu Hospital, which was installed with USAID/SIAPS support

QuanTB Helps Ensure Medicine Availability, Avert Waste, and Save Money in Bangladesh

SIAPS worked with the NTP to strengthen the management of TB medicines, project future needs, and build capacity to ensure that TB medicines are readily available to those who need them. The NTP, with support from SIAPS, formed a national PSM unit to ensure accurate forecasting and timely procurement, distribution, and stock monitoring. These activities involved extensive planning; complex analyses; and close coordination among health facilities, ministries of health, and suppliers such as the Global Drug Facility. The unit brought together partners from the NTP, SIAPS, WHO, the TB Care II project, the Damien Foundation, and BRAC to form a single platform for effective collaboration for the multidisciplinary group. In March 2014, the PSM unit began using QuanTB to quantify the projected amount of TB medicines required for the upcoming year. By capturing, collating, and analyzing multiple triangulated sources of data and by reassessing previous forecasting assumptions to ensure that the numbers of current and projected cases were accurate, the forecasting exercise yielded better estimates of the number of anticipated TB cases and how much medicine would be required. In a country like Bangladesh, treatment decisions often depend on the cost of medicine. While a full course of treatment with first-line TB medicines costs approximately USD 23, second-line treatments for a longer regimen (20 months) cost approximately USD 1,260. Shorter treatment regimens cost

approximately USD 1,000 per regimen; pre-extensively drug-resistant TB treatment costs between USD 5,000 and 6,000 per regimen; and treatment for extremely drug-resistant TB costs USD 10,000 (WHO 2010; Hassan).
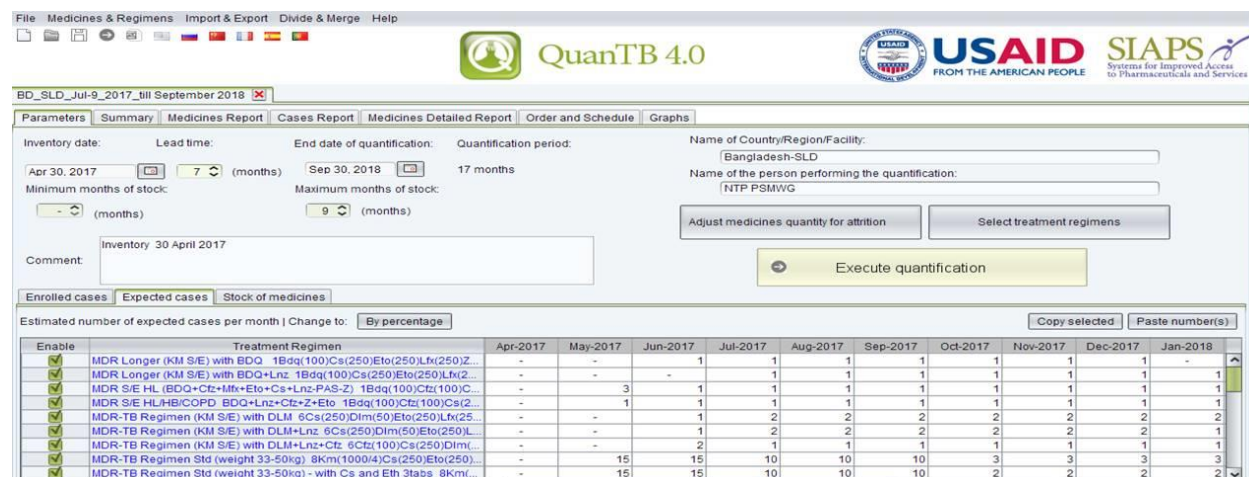

Figure 5. QuanTB

To address the potential stock-out of first-line TB medicines, the NTP was able to work with the Global Drug Facility to expedite several previously placed orders and ensure that shipments arrived in time to continue treatment for all current patients and initiate treatment for new cases. With QuanTB acting as an early warning system to signal potential stock management issues, the NTP, with technical support from SIAPS, assessed these issues and took immediate steps to ensure continued availability of TB medicines while eliminating unnecessary medicine waste. For second-line TB medicines, more than 1.5 million doses were cancelled and more than 1 million doses were reallocated to other countries in the region, saving the NTP USD 899,976 (MSH, 2015).

A Journey toward Medicine Safety in Bangladesh— Square Hospital Limited

The DGDA first introduced the PV program at 20 private hospitals, including Square Hospital Limited (SHL), and 13 pharmaceutical companies with support from SIAPS. Every doctor and nurse at the time of hire is given an orientation about PV at SHL. Currently, 30 hospitals and 30 pharmaceutical companies with designated PV focal points are working as sentinel surveillance sites to implement PV interventions under the DGDA.

To strengthen the ADE reporting system, SIAPS helped the DGDA develop PV guidelines and tools and form an ADRAC to evaluate, analyze, and make recommendations on ADEs. A team comprising DGDA officials and SIAPS technical advisors made regular monitoring visits to implementing facilities to follow up on PV activities. As of April 2017, the DGDA had received more than 1,800 ADE reports. Of these, 393 completed reports were reviewed by ADRAC and uploaded to WHO's VigiFlow database.

Square Hospital Limited introduces its PV program
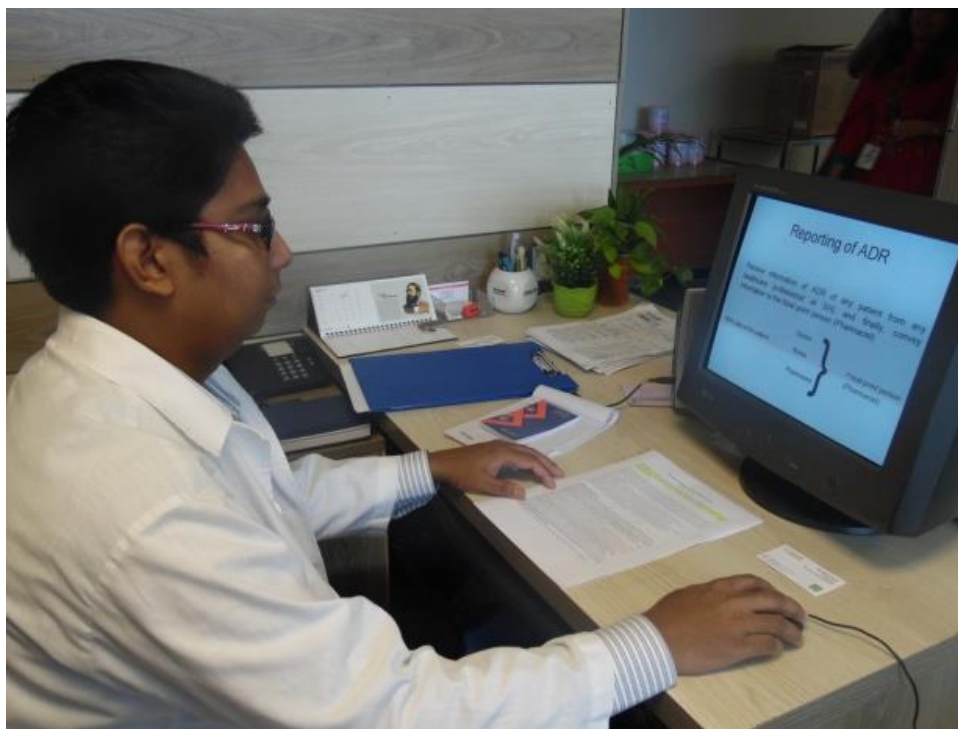
A pharmacist at Square Hospital works on an ADE report

Disposal Initiative Allows Bangladesh Hospital to Reclaim Space, Reduce Health Risks

Every piece of medical equipment has a life cycle. Large numbers of unusable item have been stored for years in the Sher-E-Bangla Medical College Hospital and other public health care facilities in Bangladesh. The MOHFW issued several orders for the disposal of these unusable items, but due to a lack of clarity on the overall disposal process and limited initiative from hospital authorities, regular disposal of these items did not take place. As a result, significant space was being wasted, and there was a substantial public health hazard associated with exposure to infectious agents.

With technical assistance from SIAPS, the MOHFW was able to focus on this problem. The Ministry's PLMC assessed the status of medical equipment that was no longer usable and explored the logistics in health facilities across the country to accelerate the disposal process. Unusable and obsolete items were identified, and all unusable linen and medical and surgical requisite items were burned in April 2016. Fire service staff were present during the procedure to ensure safety. Hospital authorities initiated the process to auction other unusable items, and approval to dispose of heavy medical equipment was pending at the time that SIAPS closed. This exercise recovered approximately 14,000 cubic feet of space in the hospital. Hospital staff at all levels were happy with the outcome of the process and committed to continuing the effort.

> "At the beginning we were slow but gradually the wheel started to roll and PV took a stronger shape in SHL. We develop our own reporting flow for ADEs". ***SHL pharmacist Md. Jahidul Hasan***

A regional workshop on condemnation of medical and nonmedical items

FUTURE OF PHARMACEUTICAL SYSTEMS STRENGTHENING WORK IN BANGLADESH

System Strengthening in Supply Chain Management, Evidence-Based Decision Making, and Pharmaceutical Management

- A smooth countrywide roll out of the asset management system will require detailed information on what is needed (e.g., a high speed internet connection at all sites and improved computer literacy).

- SIAPS-supported health information system tools were designed in partnership with the MOHFW to align with the country's health strategic plan. A comprehensive initiative is needed at the policy level to address constraints in storage space, human resource for specific tasks, equipment, and distribution systems.

- While introducing a new automated system, a backup plan for hardware/equipment maintenance must be considered.

- The establishment of a functional data center for the DGFP is very important for data security (SIAPS, 2017; SIAPS 2014).

Capacity Building

- To support the countrywide roll-out of basic logistics management training and standard inventory tools, close monitoring and training from the MOHFW is needed to ensure full use of this system and standardize a common format for the DGFP and DGHS, as users are more familiar with Excel than a software system.

- Regular reporting on post-marketing surveillance from the district level is needed to ensure real-time updates, which requires appraisal of drug registration data lists and the creation of a data entry field to be used by DGDA field officers to provide real-time data about the quality of pharmaceuticals as a part of post-marketing surveillance during site inspection (SIAPS – QR, 2014).

- Identifying and training master trainers and troubleshooters within the directorates was helpful.

- Implementing the Common Technical Document format in the DGDA required more capacity building of DGDA officials.

- The number of Government staff trained in different areas needs to be increased to address any programmatic gaps caused by high turnover.

- The optimal use of Government operational budgets is needed to ensure that certain activities can be taken over from direct project aids.

Potential Challenges

- Frequent turnover of government officials and leaders.
- Lengthy decision making process.
- Institutionalization of systematic government ownership
- Limited use of information by senior officials at the central level and in key directorates

Ways Forward to Sustain Best Practices

- Ensuring government ownership and financial commitment to continue SIAPS best practices

- Incorporating SIAPS interventions that are proven effective in the related operational plans under the MOHFW with budgets for necessary information communication technology backup, capacity building, HR, and infrastructure development. Allocate Government funding and resources to sustain pharmaceutical systems strengthening activities and health information system tools. Foster partnerships with development agencies and donors to sustain the good work done by the MOHFW and its key entities under SIAPS.

- Establishing strong communication and coordination among the MOHFW directorates and development partners to share the scope of strengthening supply management functions and health information and regulatory systems (e.g., logistics management system, drug registration system, pharmacovigilance system)

- Providing more training to develop skilled and technical human resource capacity to carry out pharmaceutical system strengthening activities

- Strengthening feedback mechanisms and ensuring accountability

- Creating data demand and information use from the user level

- Creating a working group monitoring process with interventions

- Encouraging the Government to hire an IT firm to support implementation of e-health tools after SIAPS

Future Potential Areas to Work under Pharmaceutical System Strengthening

- Extend the asset management system beyond medical equipment and the table of equipment to 1,000-bed and larger and specialized hospitals, and align human resources with the table of equipment.

- Extend the orientation on subnational documents to the upazila level to ensure standard procurement practices at all levels.

- Review and finalize the contract management system.

- Ensure environmentally friendly waste management while carrying out condemnation process.

- Undertake basic logistics management training in the remaining districts.

- Build stores in all upazilas that could be shared by the DGHS and DGFP.

- Carry out local level procurement using the SCMP.

- Further roll out the following SIAPS-supported tools to the subnational level:

  - DGHS eLMIS
  - Asset management system
  - e-TB Manager
  - TB warehouse inventory management system

- Establish a linkage between service statistics and logistics data (health and logistics management information systems)

- Ensure the smooth integration of health information system tools with DHIS2

- Capture real time data using a handheld device from the SDP level (e.g., family welfare visitor, family welfare assistant, health assistant, community health care provider)

- Conduct regular post-marketing surveillance data collection and decision making using the DGDA portal

- Institutionalize the concept of new regulatory systems in the appropriate academic curricula

After seven years of its pharmaceutical system strengthening journey in Bangladesh, SIAPS concluded in March 2018. Now the journey remains for the government and partners to sustain and expand on the success of SIAPS.

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