

Securing Ugandans' Right to Essential Medicines Program

Final Report
[2009–2014]



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SURE
SECURING UGANDANS' RIGHT
TO ESSENTIAL MEDICINES

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Recommended Citation

Uganda SURE. 2014. *Securing Ugandans' Right to Essential Medicines Program: Final Report (2009-2014)*. Submitted to the US Agency for International Development by the Uganda SURE Program. Arlington, VA: Management Sciences for Health.

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FOREWORD

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IN ANY CORRESPONDENCE ON



THE REPUBLIC OF UGANDA

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THIS SUBJECT PLEASE QUOTE NO. ADM 140/260/01

Over the last five years, I have been privileged to be at the forefront of coordinating and overseeing the Securing Ugandans' Right to Essential Medicines (SURE) program. As the SURE program closes out, it is important to look back to where we, as a sector, were in 2009 and to appraise ourselves on how far we have come.

SURE has shown that it is possible to manage medicines well at any level, and as such, directly improve access to much-needed essential medicines and supplies by the most vulnerable populations in Uganda. While the investments have been significant, I am confident the benefits are long term, worthwhile, and provide value for money.

Fifty-nine districts have been direct beneficiaries of SURE support. Their staff have been trained as medicines management supervisors and provided with tools to mentor, coach, and measure performance of their colleagues. District coordination meetings have been held and district leadership has been empowered to oversee activities. Equally importantly, implementing partners working in other districts where SURE has no physical presence have been equipped to roll out our new national strategies, such as Supervision, Performance Assessment, and Recognition Strategy (SPARS), use RxSolution for hospital inventory management, Good Pharmacy Practice (GPP) certification, and Web-based ARV ordering and reporting.

The investments in equipping tutors of health training institutions to integrate medicines management training as part of their curricula is a means to ensure that the next generation of health workers will be better prepared to effectively handle medicines right out of school.

A number of other important interventions in these last five years have dramatically changed our thinking and transformed the pharmaceutical sector to improve equity and medicine use and increase medicines availability—51% of all health facilities have now all six tracer medicines available at all times. A well-functioning national Quantification and Procurement Planning Unit has been established and has provided critical information to ensure availability, meaning reduced stock-outs. The elements of the intended Pharmaceutical Information Portal developed, a first in Uganda, is empowering managers at all levels to obtain information to make evidence-based decisions. Harmonizing the supply chain all the way from the warehouse to the facility and within has been implemented, enabling us to better utilize our limited resources. All the warehouses have introduced distribution to the facility using private sector distributors experienced in logistics provision and with tracking tools to ensure the integrity of consignments during distribution. We have also identified core issues with equity of medicines allocation, which if addressed, will transform care for Ugandans across the country.

The pharmaceutical sector has for sure experienced a formidable transformation. This has only been possible because of the sacrifice, dedication, great commitment, and willingness to change of hundreds of people in health facilities, districts, and other institutions working with the Ministry of Health and SURE to implement these interventions for the benefit of our people.

I laud SURE for the cordial and results-oriented working relationships with colleagues at all levels of the health care system and with all other stakeholders working on pharmaceutical supply issues. This has enabled us to extend, strengthen, and sustain all the results that have been achieved. I am also thankful to the USG through USAID for the support, excellent collaboration, and innovative ideas. On behalf of the Ministry and on my own behalf, I pledge to hold on to what we have achieved and guard it jealously.

Allow me, on behalf of the Pharmacy Division team, to extend our sincere gratitude to all the partners who worked along with the Ministry, the districts, and SURE, and who implemented programs that have led to the reduction of challenges in the pharmaceutical sector and contributed to the overall pharmaceutical sector development realized during the period of this report. Please take the time to read this interesting report and enjoy what our collective efforts have been able to achieve.



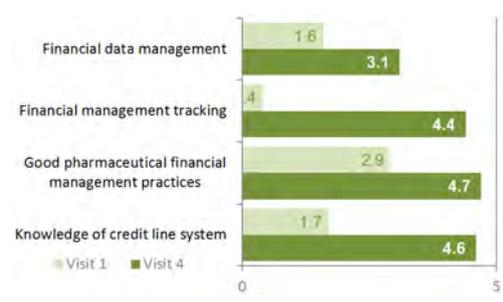
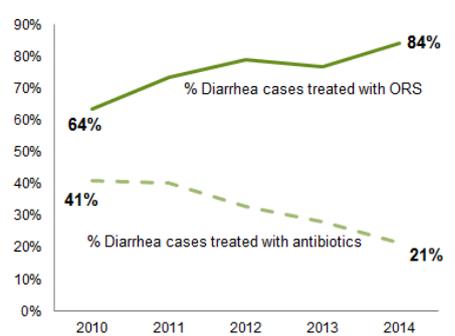
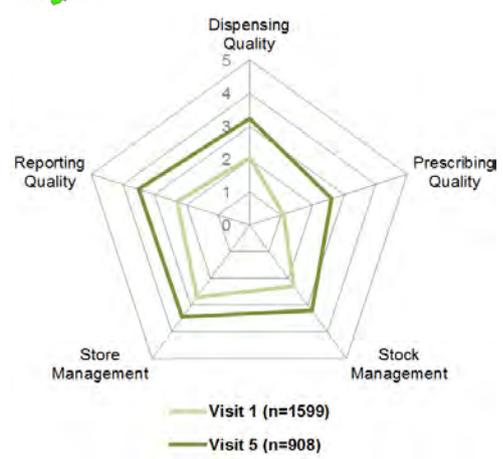
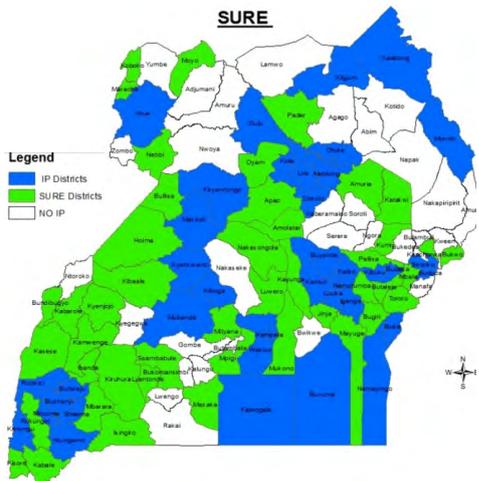
Martin Oteba

ACHS Pharmacy

ACRONYMS AND ABBREVIATIONS

ACT	artemisinin-based combination therapy
ART	antiretroviral therapy
ARV	antiretroviral
CPHL	Central Public Health Laboratory
EMHS	essential medicines and health supplies
GPP	good pharmacy practices
HC	health center
JMS	Joint Medical Store
M&E	monitoring and evaluation
MAUL	Medical Access Uganda, Limited
MMS	medicines management supervisors
MoH	Ministry of Health
NDA	National Drug Authority
NMS	National Medical Stores
PEPFAR	US President's Emergency Plan for AIDS Relief
PIP	pharmaceutical information portal
PNFP	private not-for-profit
SPARS	supervision, performance assessment, and recognition strategy
SURE	Securing Ugandans' Right to Essential Medicines
TB	tuberculosis
UMTAC	Uganda Medicine and Therapeutic Advisory Committee
UNAMU	Uganda Network for Appropriate Medicine Use
USAID	US Agency for International Development
VEN	vital, essential, or necessary
WAOS	web-based ARV ordering system

SURE PERFORMANCE HIGHLIGHTS



JMS to the door
distribution system for EMHS launched

1943
health facilities received shelving units

SPARS
in **1795**
Facilities

705
public sector health facilities



2768
people trained
[2009-2014]

National QUANTIFICATION
done for HIV, malaria, TB, reproductive health and lab commodities

Netbooks in use
COUNTRYWIDE
for data collection on facility performance

300+
trained MMS supervising medicines management nationally

INTRODUCTION

The US Agency for International Development (USAID)-funded program, Securing Ugandans' Right to Essential Medicines (SURE) was established in 2009 to assist the government of Uganda and the Ministry of Health (MoH) strengthen the national pharmaceutical supply system and ensure that Uganda's population has access to good quality essential medicines and health supplies (EMHS).

The five-year cooperative agreement was awarded to Management Sciences for Health in collaboration with the Euro Health Group, Imperial Health Sciences, Makerere University, and the Infectious Diseases Institute.

- **Management Sciences for Health** provided overall leadership and expertise on quality, access and rational use of medicines
- **Euro Health Group** provided expertise on addressing financial and information technology
- **Imperial Health Sciences** supported supply chain logistics and infrastructure design
- **Makerere University** and the **Infectious Diseases Institute** led pharmaceutical management training

Our goal was that by program's end, Uganda's supply chain management capacity would have been built from the bottom to the top, its parallel supply systems harmonized, and innovative systems established at all levels to better use limited resources. In addition, we strived to establish a supply chain system with the necessary tools, approaches, skills, and coordinating mechanisms to serve all of

VISION

To ensure that Uganda's population has access to adequate quantities of good quality essential medicines and health supplies.

Uganda's health care levels and provide a foundation on which the Ugandan government could expand.

OBJECTIVES

- Improve Uganda's policy, legal, and regulatory framework to produce pharmaceutical supply chain stability and sustainability
- Improve capacity and performance of central government entities to carry out their supply chain management responsibilities
- Improve capacity and performance of districts, health sub-districts, and implementing partners in their supply chain management roles

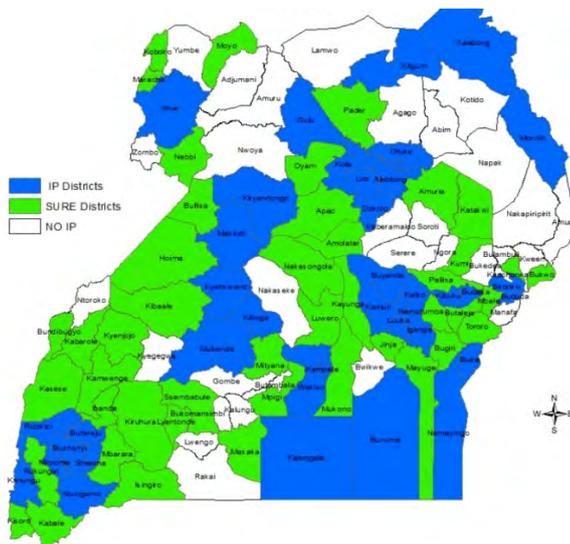
SCOPE

We designed interventions for the central, district, and facility levels. At the central level, SURE had a mandate to work with the MoH Pharmacy Division, as well as other central government institutions, including the National Drug Authority (NDA), National Medical Stores (NMS), and MoH technical programs. SURE's initial interventions were implemented in 45 districts (in green), and 14 districts (in blue) were added at the beginning of 2013 for a total of 59 districts (see Figure 1).

STRUCTURE OF UGANDA'S HEALTH SYSTEM

Uganda's health system is comprised of public providers, private not-for-profit health providers (PNFP), private for-profit health providers, and traditional and complementary medicine practitioners. Health service delivery points include village health teams, health centers (HC) from levels II through IV, and district and referral hospitals. In September 2013, Uganda

Figure 1. SURE intervention districts



had 4,478 health facilities countrywide: 66% public, 20% PNFP, and 14% private for-profit.

POLICY OPTIONS ANALYSIS

SURE collaborated with the MoH and stakeholders from the pharmaceutical sector in April 2010 to conduct a policy options analysis. The analysis characterized the Ugandan health sector and EMHS supply system and

recommended a set of options to improve pharmaceutical systems. The analysis included a cost analysis, barriers to implementation, and an assessment of the options' viability.

Key findings from the policy options analysis included the following—

- Gross underfunding of the health sector in Uganda coupled with poor prioritization and alignment of available funding resulted in duplications of effort and inefficiencies in resource allocation
- Large gap between available EMHS financing and actual need worsened by inequitable allocation
- Parallel systems exist for EMHS quantification, procurement, storage, distribution, and reporting
- High donor dependency for health commodity financing
- Weak managerial and operational structures for supply chain management, including quantification, procurement, storage, and distribution
- Poorly monitored distribution from central level to districts and from districts to facilities led to long lead times and stock-outs

Uganda's Pharmaceutical Sector 2010—Facts And Figures

- Overall government expenditure on EMHS in 2006/2007 was \$0.72 per capita—much less than the \$2.00 recommended by the World Health Organization (excluding antiretrovirals [ARVs], artemisinin-based combination therapies [ACTs], and anti-tuberculosis [TB] drugs)
- EMHS contributed over 40% of recurrent government primary health care expenditure
- Only 10% of health facilities had **all six** tracer medicines available on the day of the visit and **none** of the tracer medicines was available in all the 63 health facilities surveyed
- The average availability of a basket of 22 vital medicines, including life-saving medicines for treating malaria and diarrhea, was 53%
- None of the facilities had filled out stock cards correctly, although 68% had stock cards available
- NMS made direct deliveries to only 16% of public health facilities, mainly hospitals; the district had the responsibility to deliver EMHS to majority of the health facilities in their districts
- Only 33% of health facilities correctly treated diarrhea and only 25% correctly treated malaria
- Only 2% of health facilities had Internet access
- EMHS procurement was highly donor dependent—60% of financing came from donors
- Pharmaceutical human resource shortages were acute; rural areas had few if any pharmacists or technicians
- Information systems were weak, especially pertaining to commodities and finances

Compiled from the pharmaceutical sector survey and the policy options analysis

- Persistently inadequate EMHS availability – even of life-saving medicines – both at central and facility levels
 - Poor medicines management including stock, storage, and financial management at health facilities
- Stakeholders debated the findings and options and recommended activities to make the supply chain more efficient. Included were recommendations to strengthen transparency and knowledge of pharmaceutical financing and EMHS availability and pricing.

APPROACH

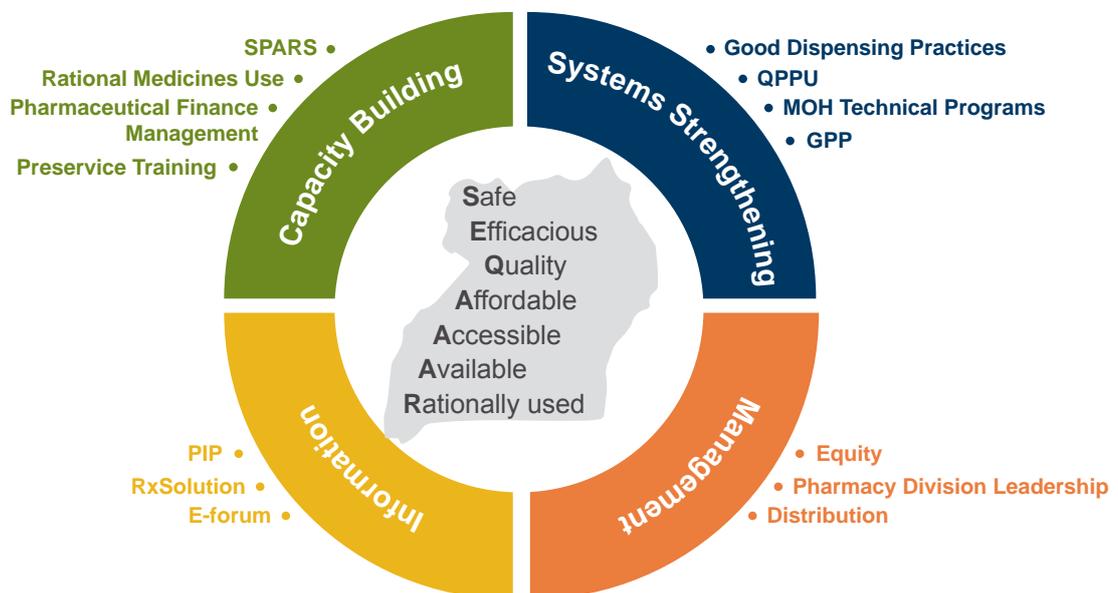
For the last decade, Uganda’s public sector supply chain actors have had to cope with an increasing number of products, programs, and patients as new treatments, such as antiretroviral therapy (ART), were scaled-up without significant additional human or knowledge capacity. Moreover, due to the high cost of these commodities, the need for reliability in supply, and resource limitations, a lot of pressure was put on suppliers to perform and manage procurements effectively and efficiently.

SURE’s holistic strategy incorporated all levels of the health system – facility, district, and central levels – and involved many diverse stakeholders, particularly the Ministry of Health’s Pharmacy Division, to meet the program’s goal of ensuring access to EMHS in both public and PNFP sectors. The approach aligned with both Ugandan and U.S. government priorities; for example, the *National Pharmaceutical Sector Strategic Plan* guides the implementation of the *National*

Drug Policy, the goal of which is to ensure the citizens of Uganda safe, efficacious, quality, affordable, accessible, available, and rationally used medicines. The SURE program lifespan and mandate dovetailed perfectly with these priorities, and we therefore worked very closely with the Pharmacy Division to harmonize activities.

SURE’s four strategies were to **strengthen systems, improve management, build capacity, and generate information for decision making** (Figure 2). By intertwining a mix of policy, regulatory, managerial, financial, and educational interventions with routine performance monitoring, SURE and other EMHS stakeholders were able to dramatically transform pharmaceutical systems and practices. To ensure sustainability of these achievements, MoH staff from the Pharmacy Division and technical programs, as well as district-level health managers and providers, were an integral part of designing and implementing SURE’s activities.

Figure 2. SURE technical approach



CAPACITY BUILDING ACHIEVEMENTS

Two out of three of SURE's program objectives related to building capacity and performance of Uganda's health system related to medicines management. Strengthening local capacity was a cornerstone to the entire technical approach. The success of the supervision, performance assessment, and recognition strategy (SPARS) provided a framework for other areas of the health system, and the partnership with Makerere University on SPARS and the revision of pre-service curricula assures sustainability.



SUPERVISION, PERFORMANCE ASSESSMENT, AND RECOGNITION STRATEGY

In spite of Uganda's long-standing commitment to ensuring universal access to essential medicines, the health system continued to face many well-documented constraints. For example, the *2010 Pharmaceutical Sector Survey* revealed that 54% of facilities stored medicines in boxes on the floor; only 4% of facilities performed a monthly physical count of EMHS; only 24% based their calculation of order quantities on stock card information; tools were lacking; and staff was unmotivated.

The PNFP health facility survey that SURE conducted in 2011 also pointed out high staff turnover, inappropriate drug use, and inadequacies in filling out stock cards, ordering, and reporting. For example, only 37% of PNFP facilities maintained an updated stock card for artemisinin-based combination therapies (ACTs), which is required to accurately quantify drug needs.

STRATEGY

With the aim of increasing access to quality EMHS, Uganda's MoH nationalized a strategy to build capacity, motivate health facility staff and supervisors, and improve medicines management in public and nonprofit health

TRAINED		
CAPACITY BUILDING	1,241	671
SYSTEM STRENGTHENING	83	43
INFORMATION	601	186
TOTAL	1,925	900

facilities. SPARS combines supportive supervision and training, indicator-based performance assessment, and a recognition strategy with incentives for both supervisors and health workers. SPARS is based on the tenet that a combination of interventions yields better and more sustainable improvement.

SPARS uses supportive supervision and on-the-job training provided by medicines management supervisors (MMS) to improve health workers' medicines management skills. The MMS, who are district-based public sector employees, received classroom and field training in the basics of medicines management, supportive supervision, how to mentor, and problem-solving and communication skills. The MMS regularly visit their assigned facilities where they coach staff to jointly identify problems and solutions.

We also developed tools and systems to facilitate SPARS implementation—

- A national EMHS management manual was developed and distributed to all health facilities and supervisors in the country
- 2,000 laminated job aids were sent to health facility dispensaries (see Figure 3)
- MMS were provided motorcycles and fuel, training in defensive riding, and help with

obtaining riding permits for travel to facilities and as a motivation strategy

- Standardized performance assessment tools were used during every supervisory visit to measure progress in dispensing quality, prescribing quality, stock management, storage management, and ordering and reporting

In addition, the SPARS data system has been computerized to improve the speed and quality of reporting. Data from the performance tools is used to make decisions from the facility level up to the national level.

The recognition strategy motivates health facility staff and recognizes gains in medicines management through a reward system. These rewards combine personal use items such as tea, sugar, and T-shirts, with items to improve delivery of pharmacy services, such as drug dispensing trays. MMS and the corresponding district health officer receive telephone airtime and a monetary allowance linked to defined milestones and submission of SPARS facility reports.

MMS collect performance data by reviewing records during supervisory visits, observing staff practices, and talking to patients. They measure performance based on 25 indicators grouped into five areas: stock management, storage, ordering

Figure 3: Standard Operating Procedure: How to Dispense Medicines

SURE developed job aids to help MMS in mentoring and coaching health facility staff.

Step 1: Check the prescription	
	<ul style="list-style-type: none"> Check that prescribed treatment is correct as recommended in the Uganda Clinical Guidelines Check that form, strength and dosage of medicine is right for the patient (e.g., child dosage and syrups for children)
Step 2: Prepare the medicine	
	<ul style="list-style-type: none"> Make sure you select the right medicine. Check name and strength on the container label Check quality of the medicines. Do not use cracked or broken tablet Count correct quantity using gloves or counting tray and spatula/spoon <p>DO NOT USE BARE HANDS!</p>
Step 2: Prepare the medicine	
	<p>If one person in dispensary</p> <ul style="list-style-type: none"> Check again to ensure that you have picked the right medicines as prescribed Check again to ensure that you have counted correctly <p>If more than one staff in dispensary</p> <ul style="list-style-type: none"> Preferably another person needs to double-check STEP 1 (prescription) and STEP 2 (medicine preparation)

and reporting, prescribing, and dispensing. The highest possible score in each area is 5.0 with a target score of 20 after five visits.

After SPARS was adopted as a national strategy, SURE and the Pharmacy Division developed a SPARS rollout plan, documented the implementation costs, and mapped implementing partners' district responsibility. In addition, SURE developed a guidance package to help implementing partners put SPARS in place, and helped the Pharmacy Division coordinate and manage the national rollout.

In 2013, SURE supported the religious medical bureaus to develop a SPARS support system to complement the work of the district MMS in supporting PNFP health facilities. The SURE support to PNFP facilities is in line with the mandate to invest in the private sector to contribute to achievement of health objectives. In addition, the Pharmacy Division wanted consistency in the logistics supervision practices and management tools in both public and PNFP health facilities.

RESULT HIGHLIGHTS

As a multifaceted, capacity-building approach, SPARS helped health facility staff change their behavior and strengthen medicines management at their facilities. Through SPARS,



“I never thought that I would be able to learn how to ride, but I managed. I was the only lady that passed in my group. Now, I don't fear riding a motorcycle because I realized that no one can know I am a lady when I wear the helmet and the riding suit. Even the community has got used to seeing me riding my bike. It feels good, and I make my supervision schedules without worrying about transport.”

Doreen Naluggwa, MMS, Mukono District

Uganda now has a powerful pharmaceutical information system that stakeholders at all levels can use to better manage EMHS, track progress, and detect problems. These achievements help assure the sustainability of SPARS.

The 188 trained MMS carried out over 7,900 supervision visits in just over three years, reaching 85% of the 2,125 facilities in 59 SURE districts by June 2014. The on-the-job training and mentoring that MMS have provided in their assigned health facilities have produced remarkable achievements. Overall 500 health staff from Pharmacy Division, SURE, implementing partners and the districts have been trained in the MMS supply chain management course.

Substantial improvements in EMHS management

The spider graph (Figure 4) illustrates how scores in all five areas of medicines management in facilities have increased from visit one to visit five—5.0 is the highest score available in each medicines management area.

Overall performance has increased by 76% after the fifth supervisory visit, and the largest gains made in prescribing knowledge and practices with a 175% improvement. Dispensing quality performance increased

The Ministry of Health adopted SPARS as a national strategy to improve medicines management in September 2011

Figure 4. SPARS spider graph

Improvements in medicines management, showing scores for visit one and visit five.

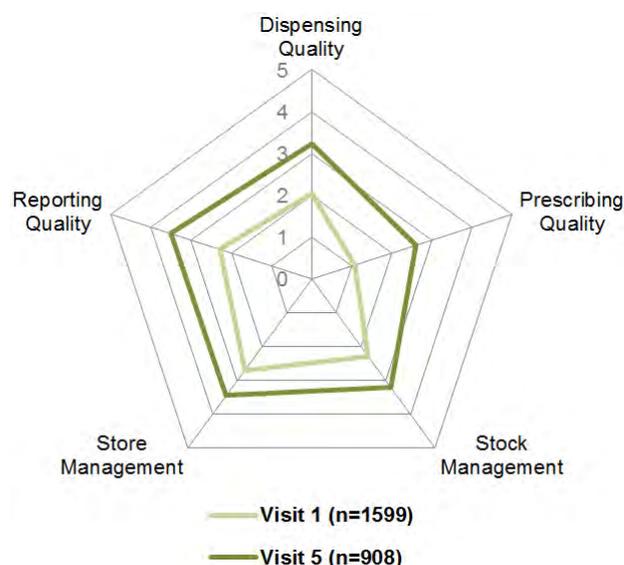


Table 1. Status of national SPARS rollout as of 15 June 2014

Activity	SURE Districts (n = 59)	Implementing Partner Districts (n = 53)	Overall (n = 112)
Number of trained MMS	188	132	320
Number of districts where MMS are trained	59 (100%)	47 (89%)	106 (95%)
National SPARS coverage by district	59 (53%)	38 (34%)	97 (87%)
Number and % of health facilities with at least one SPARS visit	1,808 (85%)	321 (19%)	2,129 (55%)
Number and % of health facilities with five SPARS visits	942 (44%)	16 (<1%)	958 (25%)

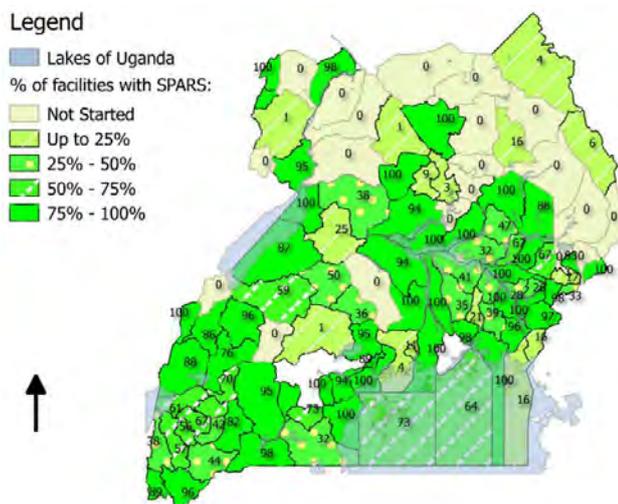
by 82% followed by reporting/ordering, stock management, and storage management at 72%, 57%, and 47%, respectively.

Improved capacity in quantifying, managing, and monitoring EMHS nationwide

SURE and Makerere University led a five-day medicines management training course for 210 storekeepers who work in higher level facilities. Storekeepers play a central role in assuring medicines availability and preventing expiry by monitoring stock levels, filling out stock cards, quantifying needs, and placing orders. MMS then build on this fundamental training through supervision and mentoring during their SPARS visits.

SURE has supported the national SPARS rollout by training MMS and implementing partners in medicines management; monitoring and evaluation (M&E); and how to collect, analyze, and use data for evidence-based decision making (Table 1 and Figure 5).

Figure 5. Status of SPARS rollout by district: June 2014

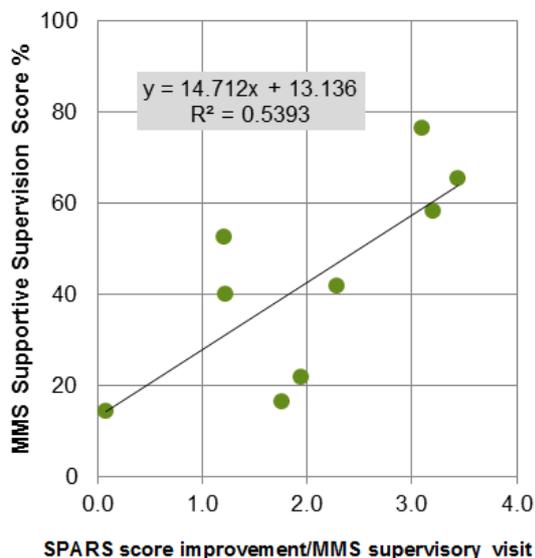


SPARS' success has caught the attention of other health programs. The National Tuberculosis and Leprosy Program and the Central Public Health Laboratory (CPHL), with support from SURE staff with SPARS expertise, are adapting the SPARS approach for use in their workplaces. For example, the TB program has established its five performance monitoring areas as TB case management, laboratory procedures, TB infection control, reporting and information systems, and logistics management of TB commodities.

Operations research: supervisory quality influences medicines management performance

SURE conducted a qualitative study to determine whether the degree of supportiveness of MMS' supervision affected medicines management in health facilities. Ten MMS' supervisory interactions were observed

Figure 6. Effect of supervision on performance
SURE research showed stronger supportive supervision correlates with improved medicines management





MMS on the SPARS e-forum

I want to take this opportunity to thank SURE, MoH, The Chief of Party SURE, Regional Supervisors and the entire staff of SURE for their efforts in ensuring that medicines are properly kept, adequately used and records fully updated. In most cases when MMS visit the facilities, health workers get moved just because the tool used during supervision does not leave any area in the facility untouched. I want to thank the men and women of SURE who designed that tool. I want to thank the team at regional office especially on communication much as there is always delay in sending of air time, whenever you just flash them for any inquiries, they always call. My request to SURE Office and other partners is only to see how to morale boost the MMS to continue with the exercise. My store was a model store for poor storage but as soon as SURE came in I should be counted among the best ones in the region and beyond and I am jealously guarding against going back to the state I started with. I usually feel that if someone enters when I am not there, it is like he or she might disorganize the arrangement. Long live SURE and I pray for the renewal of your program.

Regards, Richard, Amuria District

and rated on 11 criteria, including establishing understanding with their supervisee, communicating effectively, identifying problems, and giving constructive feedback. These individual supervision scores were compared to the facility's change in SPARS score per visit. Though the sample size was limited, there was a positive linear correlation between an MMS's supportive supervision score and a facility's per visit change in SPARS score. Thus, if MMS are more supportive supervisors, their facilities will achieve greater improvements (Figure 6).

Higher quality data and increased intra-rater reliability

SPARS data quality and reliability is an issue of national concern because it forms the basis for policy reviews and decisions. SURE designed a study to measure MMS's inter-rater reliability for 24 SPARS indicators and designed activities to improve data collection and analysis. The number of indicators that had low reliability scores decreased from nine (38%) in 2011, to five (21%)

in 2012, to four (17%) in 2013. Overall, reliability of all indicators improved 14% from 68% to 82%, although storage management still needed improvement (Figure 7).

IMPROVED PHARMACEUTICAL FINANCIAL MANAGEMENT SKILLS

Health workers must understand and manage budgets effectively to optimize limited resources. Consequently, SURE used SPARS as a foundation to develop and pilot a pharmaceutical financial management strengthening strategy. SURE trained 29 district MMS in a five-day course so they could introduce and implement budgeting, planning procurement, vetting an order, monitoring budgets and commitments, and understanding and developing general financial information. The MMS and health workers also received a national manual on pharmaceutical financial management and specially developed financial tools.

Figure 7: Percentage of inter-rater reliability and agreement by assessment area

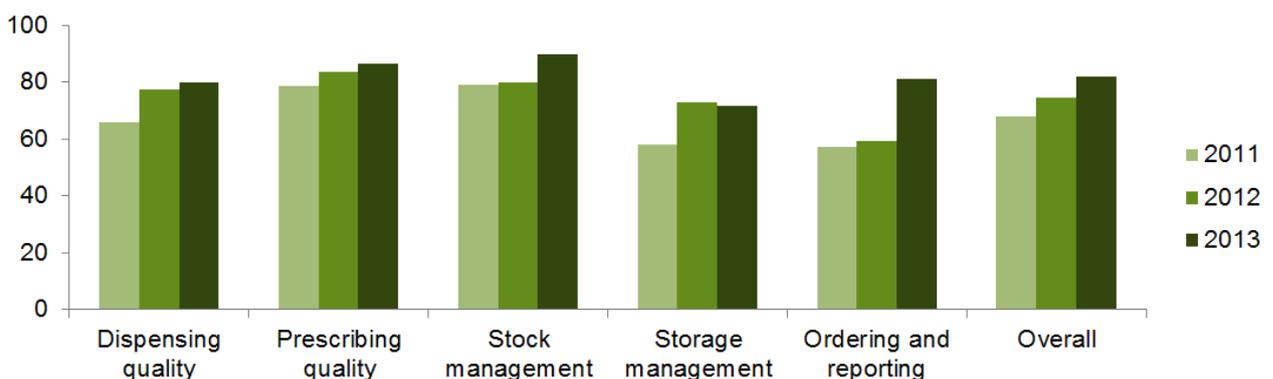


Table 2. Pharmaceutical financial management areas scores by visit (maximum score 5)

Indicator	Visit 1 Score (n = 51)	Visit 2 Score (n = 43)	Visit 3 Score (n = 32)	Visit 4 Score (n = 14)
Knowledge of credit line system	1.7	3.8	4.4	4.6
Good pharmaceutical financial management practices	2.9	4.4	4.6	4.7
Financial management tracking	0.4	2.6	3.6	4.4
Financial data management	1.6	2.7	3.0	3.1
Total (out of 20 points)	6.6	13.5	15.6	16.8

A critical aspect of the pharmaceutical financial management concept is the use of the vital, essential, or necessary (VEN) classification to guide procurement decisions at central and higher-level facilities that place bimonthly orders. Using VEN to prioritize orders ensures that resources are used for supplies that can potentially provide the greatest health impact.

The trained MMS made 140 visits to 51 HC IVs and hospitals as part of a pilot study to increase skills in pharmaceutical financial management. Eighty-five percent of these facilities have had at least two visits and almost two-thirds have had three visits, which have increased facilities' overall pharmaceutical financial management scores by a dramatic 139% (Table 2). The monitoring tool includes eight indicators covering four areas: credit line system, financial management practices, financial management tracking, and financial data management.

PRE-SERVICE CAPACITY BUILDING IN MEDICINES MANAGEMENT

Uganda has a disproportionately low number of pharmacy professionals compared to the population and therefore, health workers must be prepared to work outside their scope of training on activities such as medicines management. Pre-service exposure to important pharmaceutical management topics, such as rational medicine use and stock management, are critical for medical practice competency in health fields.

In 2012/13, only 26% of pharmacists and 37% of pharmacy technician posts in the public sector were filled.

STRATEGY

Pre-service curriculum reform is a cost-effective and sustainable intervention that leads to broader health system strengthening. Good pre-service training reduces the need for future large-scale and expensive in-service trainings. Given the diversity of health professionals involved in medicines management, SURE treated the expansion of pharmaceutical skills and knowledge as an important cross-cutting issue.

SURE collaborated with the Ministry of Health and Makerere University using a combined approach that targeted health training institutions—advocating to incorporate medicines management into their curricula, training tutors to implement medicines management training, and providing support materials and national manuals.

RESULT HIGHLIGHTS

The minimum skills package for pre-service training, which health training institutions will use to guide their curricula, was endorsed by the Ministry of Education and Sports. Makerere University trained 160 tutors from 95 training institutions in both medicines management and how to support training at their respective institutions. The participating institutions have received EMHS manuals as a reference for their students.

After the intervention, a survey of 17 institutions found that 24% had already changed their

“If you don't cover a topic such as inventory management in your courses, then once in your job, you assume it must not be your responsibility. If everybody receives pre-service training in medicines management, then everyone will share the responsibility.”

Denis Okidi, Pharmacist and
SURE District Technical Advisor

curriculum. Also, a much higher proportion of institutions were teaching the core competency topics compared with the baseline: three schools had 100% coverage of 10 core competency topics, and over half of the schools taught at least 50% of the topics compared with only 16% before the intervention. The true results of this intervention will be evident when trainees enter the health workforce in the coming years.

In addition, in a north-to-south linkage, SURE brought together pharmacy students from Uganda’s Makerere University and Denmark’s Copenhagen University to jointly conduct two complementary qualitative studies. The first study recorded health workers’ experiences and perceptions of supervision, and the second investigated the role of leadership in medicines management. Initial results showed that health workers’ perception of SPARS is positive and is influenced by MMS behavior, medicines availability, the recognition scheme, the condition of the health facility including shelving, and leadership support. The linkage also strengthened collaboration and capacity building between lecturers in the Department of Social Pharmacy at Copenhagen University and the Department of Pharmacy at Makerere University.

IMPROVING MEDICINES USE

Even if correct medicines are always available for treatment, efforts and resources can be wasted if prescriptions are incorrect or unnecessary, dispensing inaccurate, or medicines use is inappropriate. Context-specific and updated prescribing and dispensing reference materials help ensure that patients receive both the correct medicine and instructions on how to take the medicine. Before the SURE program began, facilities had few if any references available, and what they did have was outdated. Improving prescribing and dispensing practices was greatly needed to ensure the best use of limited resources and optimal patient care.

STRATEGY

SURE combined several well-known and innovative methods to improve use of medicine in Uganda. SPARS was used at facility level to identify medicine use problems, monitor progress, and improve prescribing practices. We also capacitated multi-level teams to work

together on medicine use problems in a unique approach that combined training on M&E and rational medicine use with a mechanism to provide academic mentoring. In addition, SURE worked with the MoH to update and develop reference books needed to assure rational use and established organizational systems to support appropriate medicines use.

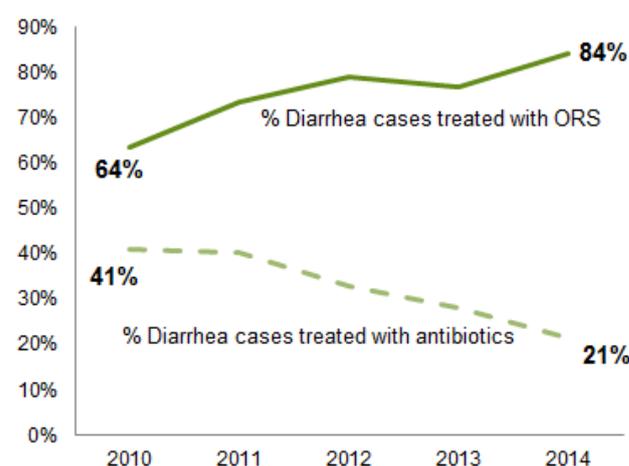
RESULT HIGHLIGHTS

SURE’s accomplishments in rational medicines use center on improving prescribing and dispensing quality at facilities; building the capacity of health facility staff to investigate, intervene, and sustain appropriate practices; and establishing organizational systems and useful guidelines to promote and sustain appropriate practices.

Improvements in prescribing and dispensing practices

Through SPARS, SURE has facilitated great improvements in prescribing and dispensing at all care levels. Progress has been made in appropriateness of prescribing for common conditions, such as malaria, diarrhea, and respiratory tract infections. Figure 8 illustrates improvements in appropriate treatment of non-bloody diarrhea with oral rehydration solution. Fewer patients receive antibiotics or injections, and the average number of medicines prescribed per patient has decreased (Figure 9). Further, more patients now know why they are taking their medicines and how to take them, and at least 50% of the medicine labels include most of the important information—up from 10% (Figure 10).

Figure 8. Treatment of nonbloody diarrhea in SPARS facilities: 2010–2014



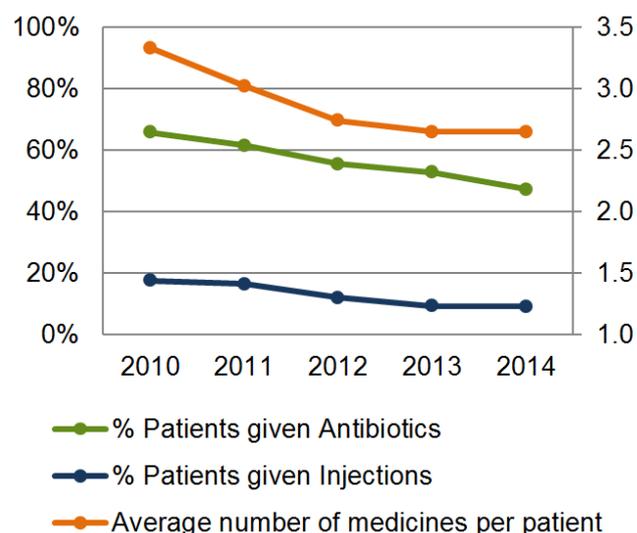
Organizations to support rational medicines use

SURE worked with the Pharmacy Division to re-establish the Uganda Medicine and Therapeutic Advisory Committee (UMTAC) within the MoH structure. UMTAC is responsible for updating treatment guidelines, including the essential

medicines lists. It comprises experts from MoH technical programs, Makerere University, WHO, NMS, SURE, and national and regional referral hospitals.

SURE also created the Uganda Network for Appropriate Medicine Use (UNAMU). UNAMU connects academics and members of the International Network for Rational Use of Drugs–Uganda as mentors to health workers that have been trained to identify and address priority medicine use problems in their facilities using proven interventions.

Figure 9. Rational medicines use trends in SPARS facilities: 2010–2014



Rational use of medicine training and studies

SURE developed a Uganda-specific training course in rational use of medicines and trained 62 health workers from 36 hospitals. The focus of the training was problem identification coupled with determining the causes of the problems. The health workers were then trained on selecting the most appropriate evidence-based interventions to address medicines use problems. To apply their skills and knowledge, nearly 40% of the trainees submitted study proposals on investigating medicine use in their hospitals. Four proposals were selected for support and to receive technical

Figure 10: Performance on selected prescribing and dispensing indicators in SPARS facilities: 2010–2014

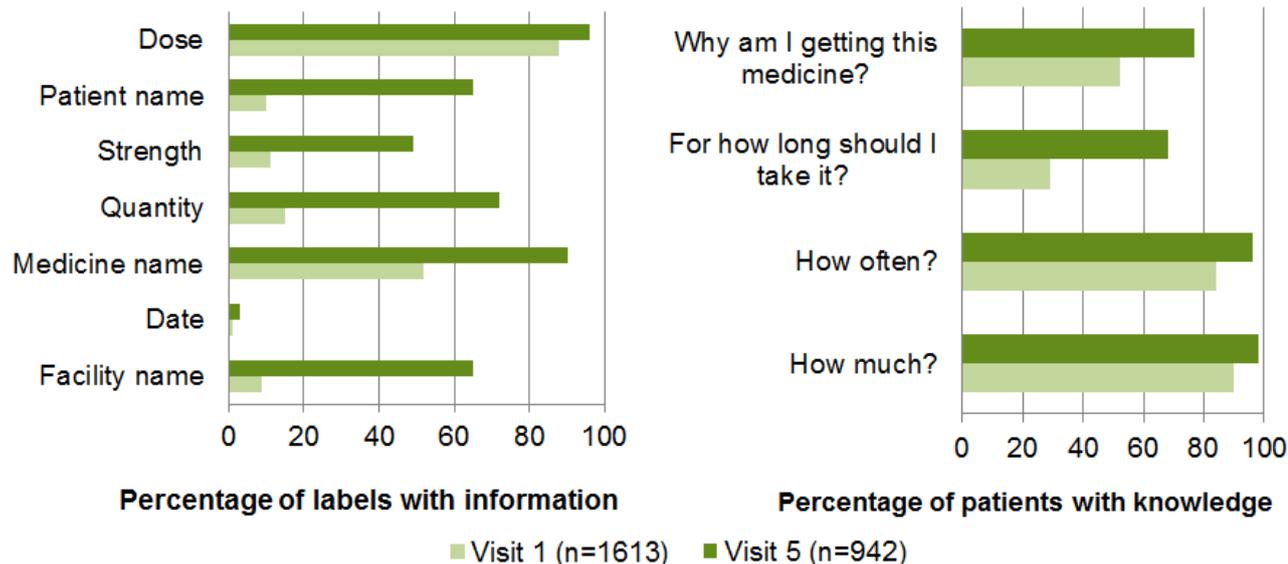


Table 3. Overview of the hospital medicine studies chosen for funding

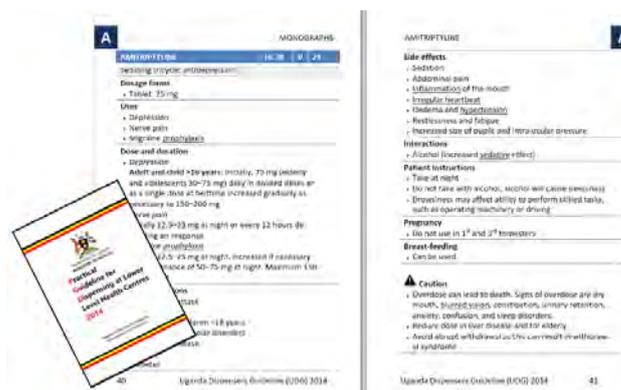
Hospital	District	Study Title
St. Francis Buluba Hospital	Mayuge	Use of antibiotics for acute respiratory tract infections in children under five years
Ishaka Adventist Hospital	Bushenyi	Use of antibiotics for acute non-bloody diarrhea
Mbarara Regional Referral Hospital	Mbarara	Establishment of a medicines information desk at Mbarara Regional Referral Hospital
Kayunga Hospital	Kayunga	Prescription of antimalarials in the outpatient department

advice from UNAMU (Table 3). The health workers will present their findings to UNAMU and the Pharmacy Division to inform policy and further research.

Up-to-date reference material

The *Uganda Clinical Guidelines 2012* is the essential reference for Ugandan prescribers. SURE helped UMTAC update the guidelines and incorporate new recommendations for HIV and malaria treatment. In 2012, the Essential Medicines and Health Supplies List for Uganda was harmonized with the *Uganda Clinical Guidelines* for the first time, which helps ensure that medicines recommended in the guidelines are available in the public sector. Also, Uganda is one of the first countries in the world to classify all essential medicines and health and laboratory commodities as vital, essential, or necessary. VEN classification is used to prioritize which items to make available where resources are limited, using a clinical rationale. Most health workers are not specifically trained in medicine dispensing, which may not only

Figure 11: Monograph from the *Practical Guidelines for Dispensing in Lower Level Health Centers 2014*



waste resources, but also compromise patient safety. The *Practical Guidelines for Dispensing at Lower Level Health Facilities 2014* is a first in Uganda (Figure 11). The guidelines provide dispensers with critical information needed to ensure that patients receive the correct medicines and instructions to take them correctly.

SYSTEMS STRENGTHENING ACHIEVEMENTS

SURE helped Uganda address its most pressing short-term needs, while strengthening its existing systems to assure long-term sustainability. SURE worked with governing bodies to create mechanisms for in-country stakeholder collaboration that optimize donor resources, coordinate pharmaceutical management planning, and harmonize tools and approaches, so the system can operate more efficiently. Moreover, SURE worked side-by-side with the Pharmacy Division to ensure their capacity to lead Uganda's pharmaceutical sector.



QUANTIFICATION AND PROCUREMENT PLANNING UNIT

For any supply system to work efficiently, a strong link must exist between forecasting, quantification, procurement, warehousing, inventory management, and the logistics information management system.

Prior to 2010, Uganda's medicines supply chain was weakly coordinated and information sharing was limited. Effective use of available medicines funding was challenging since the actual needs were unclear. Establishing national requirements was difficult because various parallel information sources existed, data to inform quantification was not centralized, and the forecasting methodology was not standardized. Likewise, procurement planning was also highly vertical, uncoordinated, and dependent on donor agencies. The MoH lacked a central dedicated mechanism to discuss stock status and take decisive action to avoid stock out and expiry.

STRATEGIES

In 2010, SURE created the Quantification and Procurement Planning Unit (QPPU) within the Pharmacy Division to integrate, coordinate, and monitor EMHS quantification, procurement, and supply planning. This was an initial step toward increasing procurement efficiency. To support the unit's operations, staff from MoH technical programs, central warehouses, and the QPPU were trained to use quantification tools (Quantimed and QuanTB) and pipeline monitoring tools (PipeLine and the Global Fund procurement and supply management system).

RESULT HIGHLIGHTS

The founding of the QPPU has been one of SURE's major achievements. The unit's function has enabled stakeholder coordination, information-sharing, and decision making and has been fundamental in streamlining the supply chain.



“This is a show of what the quantification report and MoH coordination can achieve”

Dr. Christina Mwangi of the US Centers for Disease Control and Prevention

Coordinated national quantification

The QPPU has successfully managed national quantifications, gap analyses, and supply planning in coordination with MoH technical staff from AIDS, TB, laboratory, reproductive health, and malaria programs. The quantification reports generated have been used to mobilize resources to address gaps and avert stock-outs.

Better monitoring averts stock-outs

The QPPU produces bimonthly stock status reports (Figure 12) that provide critical information on national stock gaps in medicines and health supplies, which allows decision makers to prioritize purchases and avoid stock-outs. The unit shares the reports with key stakeholders and the Commodities Security Group for further action.

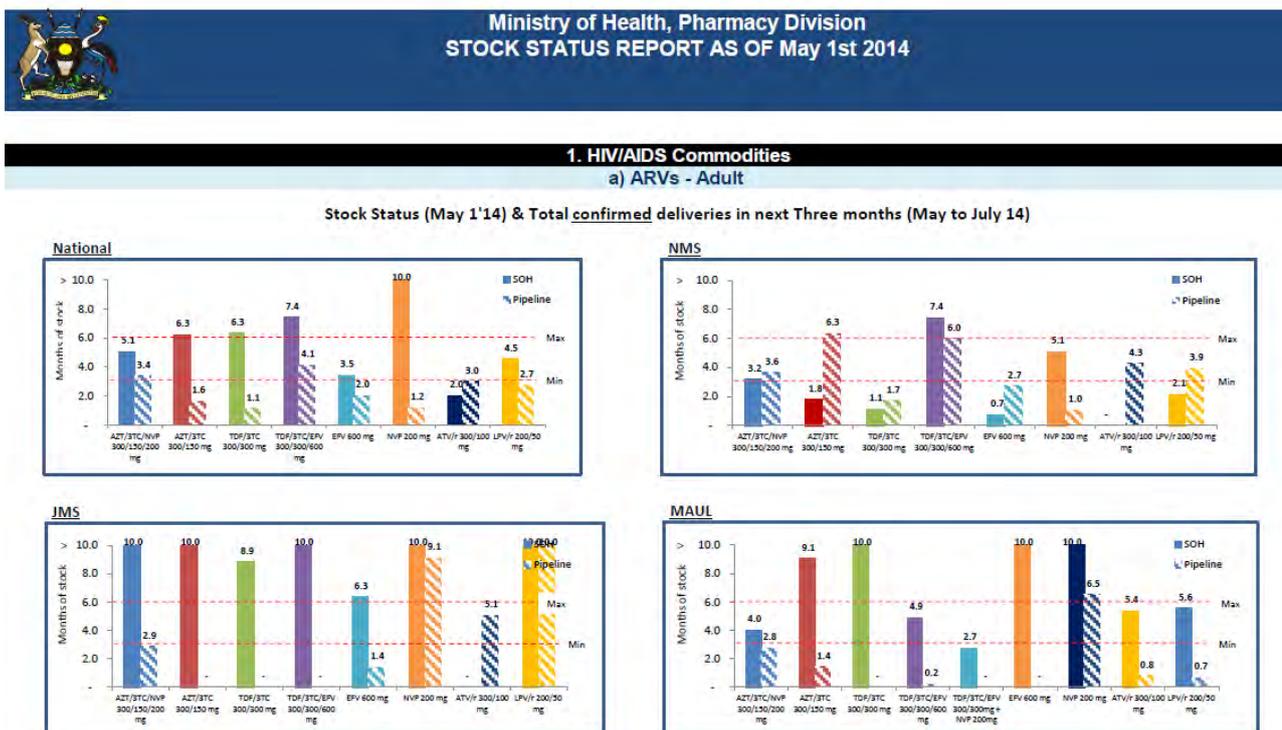
The QPPU set up PipeLine databases to monitor the MoH technical programs’ commodity supply plans. This enabled routine risk assessment of the supply chain and mitigation responses, such as quick inter-warehouse stock transfers. To build sustainability, a mini-server was installed in the Pharmacy Division to host all PipeLine databases, thereby improving data security and accessibility by the program logisticians and Pharmacy Division staff.

Decision makers regularly receive critical information

In addition to stock status and quantification reports, the QPPU monitors supplier performance and shares the information with stakeholders, such as government agencies, development partners, the Health Partners Advisory Committee, and MoH technical working groups.

With SURE, the Pharmacy Division established a Commodity Security Group that meets monthly to coordinate commodities-related activities for disease programs. The members of the group include the Pharmacy Division, development partners, implementing partners, MoH technical programs, and central-level warehouses (NMS, Joint Medical Store [JMS] and Medical Access Uganda, Limited [MAUL]). The group’s key decisions include agreement on inter-warehouse stock transfers, initiation of emergency orders, and expediting or delaying shipments. Based on Commodity Security Group’s agreements between January 2013 and February 2014, the QPPU initiated warehouse transfers of ARVs and cotrimoxazole worth approximately \$6.8 million, which prevented product shortages and disruption of health services downstream.

Figure 12: Bi-monthly Stock Status Report for ARVs. These reports have been produced since 2010.



QPPU Data Helps Fill Funding Gaps

In May 2014, Uganda submitted a Global Fund application for an HIV grant prior to the standard July 2015 application. This grant would fill a budgetary gap in funding from July 2014 to June 2015. Of the \$75 million requested, \$74 million was earmarked for health commodities. SURE conducted the national quantification and gap analysis for the application, and SURE also helped the AIDS Control Program and QPPU review and update the procurement and supply management plan for the HIV Round 7 Phase 2 grant. In August 2014, the Global Fund announced the approval of \$69 million for the HIV extension and \$113 million for the malaria standard application.

“This is the first time we have been presented with such useful information on the national gap, and now we are better equipped to allocate our resources on priority areas and also put government to task to increase funding towards medicines procurement.”

Prof. Vinand Nantulya, Chairman of the Board of the Global Fund Country Coordinating Mechanism

commodities (HIV, TB, malaria, laboratory) in silos with order forms, order deadlines, and storage locations separate from other EMHS.

The ARV supply system was even more complex with six funders, eight procurement agencies, four national-level storage sites, and seven different distribution networks (Figure 13). Implementing partners would quantify, procure, and buffer HIV commodities to ensure continuous availability in the facilities; however, the complicated logistics often duplicated ARV procurement and distribution efforts at facilities. Furthermore, as each funder had different reporting forms, staff time and energy were strained from parallel and duplicate reporting requirements.

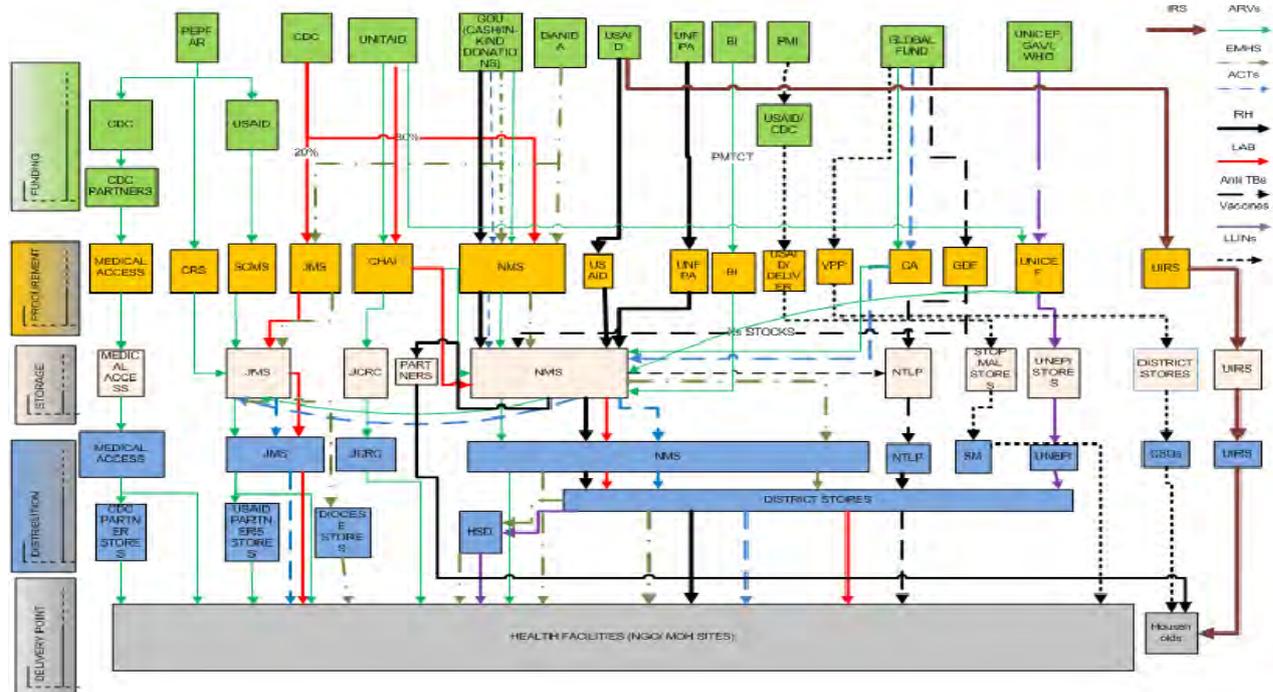
STRENGTHENING MINISTRY OF HEALTH TECHNICAL PROGRAMS

At the start of the SURE program, poor medicines availability at health facilities resulted both from lack of funds to procure EMHS and weak logistics management capacity. For example, technical program staff determined product needs without coordination or pipeline monitoring, while health workers lacked the ability to manage stock well enough to determine what to order. In addition, health workers managed different program

STRATEGIES

SURE conducted assessments of the CPHL and the National TB and Leprosy Program to provide the evidence needed to design appropriate interventions to increase capacity within the technical programs.

Figure 13: ARV supply chain system before SURE



SURE's TB assessment revealed that quarterly supervision visits to health facilities focused primarily on case management, and inadequate attention to logistics meant that facilities still had stock-outs and expiries. The program lacked a central coordination mechanism, which led to different staff members controlling scattered bits of information and preventing a comprehensive view of procurements and shipments of anti-TB medicines.

The CPHL assessment identified similar problems with lack of coordination and inadequate data, but also noted challenges related to laboratories not having the proper equipment and supplies to conduct tests needed at their health facilities. Laboratories also faced difficulties with equipment downtime, ensuring the cold chain, and maintaining quality, particularly for re-constituted reagents. Above all, however, the primary barrier was limited funding for commodities, infrastructure, personnel, and equipment purchase and maintenance.

The US President's Malaria Initiative and Global Fund were providing free malaria commodities to PNFP facilities through JMS. However, only 20% of the PNFP facilities were ordering from JMS. SURE's field assessment uncovered a lack of awareness of the free commodities, poor stock management, and high transportation costs.

The resulting interventions were designed to address the identified problems—

- Build health workers' capacity to improve supply chain management through supervision and performance assessment with tools, manuals, indicators; train supervisors

to specifically support HIV, TB, and laboratory logistics and management needs

- Strengthen supply chain management and performance monitoring by seconding experts in logistics and M&E to the technical programs for TB, malaria, HIV, and laboratory
- Improve coordination by centralizing quantification and stock and pipeline
- Increase communication and coordination between JMS and PNFP facilities about malaria commodity orders; establish systems to improve order quality

Also, to help CHPL with their specific needs, SURE arranged for the assistance of an international laboratory expert and a computer programmer /systems analyst.

RESULT HIGHLIGHTS

SURE's interventions in MoH technical programs have led to many accomplishments for Uganda's health sector. The following sections describe selected achievements.

Web-based ARV ordering system increases efficiency

To simplify ordering, SURE, the MoH Resource Center, and the AIDS Control Program created a centralized reporting and ordering system as part of the existing MoH management information system. The web-based ARV ordering system (WAOS) has improved reporting rates, data quality, and completeness, problems that had made donor requirements difficult to meet. WAOS has also decreased central level's time-consuming compilation of facility orders and has increased access to accurate order data and patient statistics. The system has proven to be a substantial advantage over the original paper-based system (Figure 14).

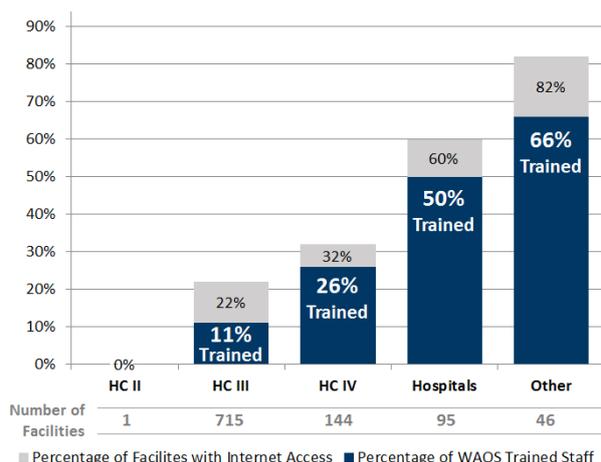
Among facilities supported by implementing partners, ARV reporting rates between 2007 and 2010 for the US President's Emergency Plan for AIDS Relief (PEPFAR) program averaged 80% to 90%. Among public sector facilities without support, ARV reporting rates for the same period averaged 40% to 50%. Since WAOS was introduced in April 2013, reporting rates have generally improved, especially for public health facilities that order from NMS.

At the end of SURE, of the 1,001 ART-accredited sites, 20% overall have been trained to use WAOS, but that number has been constrained by lack of Internet access. (Figure 15)

Figure 14: WAOS advantages



Figure 15. WAOS status at ART sites: April 2014



Streamlined and rationalized EMHS management

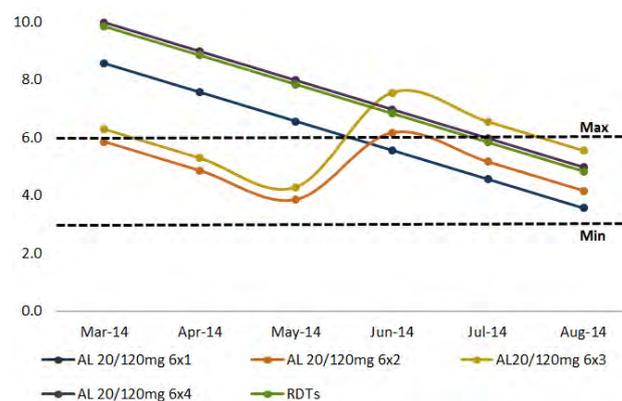
Fragmentation has long plagued Uganda’s drug supply chain. Thus, SURE set out to streamline the supply chain from top to bottom and from side to side. It was common to find multiple program-specific storage areas within facilities. For example, an HC IV might have one store for TB commodities, one store for ARVs, one pharmacy store for other EMHS, and the laboratory keeping its own supplies. It was practically impossible to get an overview of what was in stock and what was to be ordered.

Under the principle of “one item–one store” (i.e., one stock card per item), TB and HIV commodities were eventually integrated into the main store. Order deadlines for all commodities are now uniform, and the maintenance of one stock card for each product has made ordering and stock management easier. At the central level, TB commodities have been integrated with other EMHS at NMS.

Additionally, instead of multiple warehouses shipping to each facility, each health facility is now linked to only one, either NMS, MAUL, or JMS. To drive the “one facility–one supplier” approach, WAOS makes it impossible to order from anywhere other than a facility’s designated supplier. The new system saves time and money, as implementing partners are no longer responsible for keeping stock to supply their facilities. Also, there are no longer trucks from different warehouses delivering HIV commodities to the same facility. Reporting on ARVs and HIV information has been streamlined as well, reducing facility staff work load.

SURE also helped the Pharmacy Division create a national product code, which will make

Figure 16: Malaria commodity stock status at JMS from March to August 2014



the one supplier–one facility strategy easier to implement in addition to other strategies such as electronic ordering. All central warehouses have agreed to adopt the product coding system once it is finalized.

Rates and quality of PNFP malaria commodity orders improve

Over the three years that SURE has supported PNFP facilities’ malaria commodities ordering from JMS, ordering rates have increased from 20% to 63% and the quality of orders from 1% to 25%. A quality order is defined as having correct average monthly consumption, order quantity, and ratio of ACT doses consumed to malaria cases. Barriers to significant progress remain, including high staff turnover at PNFPs that result in low institutional memory, limited skills transfer, and poor sustainability.

Monitoring malaria medicines assured availability and averted waste

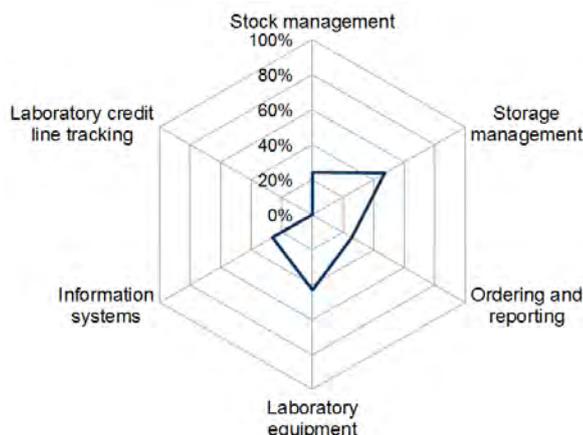
SURE’s continuous communication with PNFP facilities to monitor orders and stock has ensured availability of malaria commodities and averted expiries (Figure 16). For example, in February 2013, over 5,000 ACT packs and 15,000 rapid diagnostic tests were at risk of expiry at JMS. To assure that the commodities were not wasted, SURE coordinated with stakeholders to encourage PNFP facilities with high patient loads to submit orders for the at-risk products. The Malaria Consortium distributed the remainder through their village health teams, which averted waste.

National data on malaria commodities availability and use generated

In 2010, 2011, and 2014, SURE conducted

Figure 17: Example of Lab-SPARS spider graph

Six laboratory monitoring areas each have a maximum score of one, which are calculated proportionally based on the number of indicators in each area.



malaria end use verification surveys, a practice in President's Malaria Initiative focus countries to assess the availability and use of malaria commodities at health facilities. SURE collected data from 75 health facilities using mobile phones and netbooks that analyzed data automatically. The data indicated that malaria cases in under-fives decreased by one-third over four years from 36% in 2010 to 25% in 2014. Confirmed malaria cases receiving an ACT increased from 48% to 85%. Availability of ACTs also increased overall, but in 2014, 13% of surveyed facilities did not have any ACTs in stock on the day of the visit.

Capacity built at laboratories

To build capacity and address weaknesses in laboratory commodity management, SURE and CPHL modified the SPARS concept to focus specifically on laboratory logistics, equipment, information systems, and finance. Over the course of several workshops, SURE and CPHL staff developed a customized performance assessment tool with 32 indicators, adapted existing SPARS training materials, and trained trainers accordingly. After pilot testing, the final tool is now available in hard copy and electronic form. SURE also developed a Lab-SPARS database so that a facility report can be generated to show performance on the five monitored areas (Figure 17).

SURE also worked with CPHL to develop its first M&E framework to monitor logistics performance at national and facility levels. A baseline M&E assessment report was produced in March 2014 based on data from the Lab-SPARS assessment tool. The baseline report will allow CPHL to measure future progress.

SURE staff member, Belinda Blick, collecting end use verification data using a mobile phone.



GOOD PHARMACY AND DISPENSING PRACTICES

Since its inception in 1993, the National Drug Authority has been responsible for ensuring that all medicines sold in Uganda are safe and efficacious. It also licenses private sector retail pharmacies and drug shops and regulates their pharmaceutical practices. SURE realized that requiring public and PNFP facilities to meet the same practice and premises quality standards as the private sector had the potential to greatly improve patient care for the majority of Uganda's population that depend on their services.

STRATEGY

SURE support to NDA has focused on developing standards of practice, strengthening regulations, and carrying out its responsibilities more efficiently, such as developing electronic systems to replace those done by hand. The good pharmaceutical practice (GPP) certification of public and PNFP dispensaries is based on SPARS indicators and NDA's private sector inspection tool.

The GPP certification is based on an assessment of 53 functional GPP performance indicators measuring a combination of dispenser practices (36%), the physical structure of premises (32%), store management (23%), and operating requirements (9%). Seven out of the 10 indicators considered critical for certification are related to infrastructure. Forty-two NDA inspectors received training on how to measure the GPP indicators and enter the findings into an electronic data form that can be uploaded to a central database.

SURE also worked with NDA to develop good distribution guidelines to clarify and enforce

the roles and responsibilities of wholesalers and retail pharmacies. Wholesalers are only supposed to sell to licensed outlets such as retail pharmacies and drug shops, but they often also function as retailers and sell to the public. Likewise, pharmacies and drug shops are only to purchase supplies from licensed wholesalers and not street vendors. Retail pharmacies, drug shops, and wholesalers play a critical role in guaranteeing medicines quality and preventing entry of substandard and counterfeit medicines and supplies in the market. The new guidelines are based on World Health Organization recommendations that define how pharmaceutical products must be handled from their import or manufacture right up until the point they are given to patients.

RESULT HIGHLIGHTS

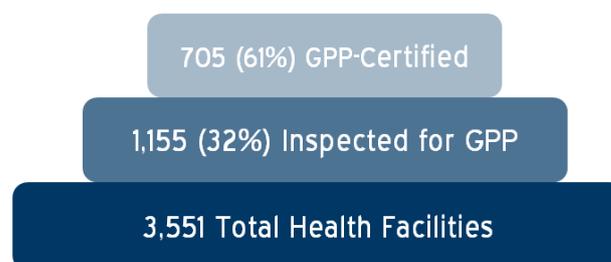
The NDA–SURE collaboration to create a GPP certification for public sector dispensaries is an innovative and potentially high-impact initiative, while the wholesaler dispensing policy change has major ramifications in terms of increasing product quality and traceability and eliminating counterfeits in both the public and private sectors.

Medicine outlets certified in good pharmacy practice

With SURE’s support, NDA has inspected one-third of the public and PNFP dispensaries in Uganda (Figure 18). Overall, 61% of inspected public and PNFP facilities have been now certified. Health facility in-charges, district health officers, implementing partners, and the MoH can now use NDA’s extensive GPP inspection data to track performance in pharmacy practice standards and identify facilities in need of improvements.

In a comparative study of GPP inspections at 601 SPARS-supported facilities and 38 facilities without SPARS support, the SPARS facilities met more significant requirements in the GPP inspection tool than non-SPARS facilities. On average, a SPARS supported facility had only

Figure 18. Status of GPP certification in public and PNFP dispensaries



4 indicators with an unacceptable score (out of 52 indicators) compared to 12 at unsupported facilities (Table 4). SURE also discovered that higher-level facilities were more likely to receive certification: 93% of hospitals were certified compared with 57% of HC IIs.

Investments in infrastructure and tools

SURE and the Pharmacy Division conducted a national assessment of 3,348 facility stores in 2012, which detailed the severe deficiencies in infrastructure and lack of pharmaceutical management tools. The study estimated that each district would require about \$39,000 to address the stores’ structural needs. Lack of shelving, for example, meant that health workers had to stack boxes of medicines on the floor, which made adequate storage and dispensing impossible.

One of SURE’s major program contributions was to procure 3,212 shelving units and distribute them to 1,943 facilities in 59 districts. In addition, SPARS developed and disseminated useful tools, including 5,000 EMHS management manuals and redistribution guidelines, 2,400 stock books, 1,000 supervision books, 5,000 dispensing logs, 5,000 good dispensing guidelines, and 8,500 copies of the *Uganda Clinical Guidelines 2012*.

Raising public awareness of quality pharmaceutical services

To increase public awareness of GPP-certified health facilities and the standards expected

Table 4: Impact of SPARS on GPP implementation of public sector facilities

A perfect score on all GPP indicators would be zero. Both certified and not certified facilities in the SPARS-supported group scored much better than those in the unsupported group.

Certification status	SPARS supported facilities		Non-SPARS supported facilities		p-value
	Mean GPP score (perfect score = 0)	95% CI	Mean GPP score (perfect score = 0)	95% CI	
Not certified	4.87	4.31 – 5.43	14.85	10.21 – 19.48	0.000
Certified	3.04	2.77 – 3.32	9.88	7.64 – 12.11	0.000

Figure 19. Sawa Sawa promotional posters
SURE developed posters in eight different languages to educate the patients on some of the changes they could expect following the facility having been GPP certified.



there, SURE and NDA developed an outreach campaign called *Sawa Sawa*. This catchy phrase commonly used throughout Uganda, is Swahili for “everything is okay.” A *Sawa Sawa* sign marks a facility as GPP-certified, and complementary posters inform patients about the standards they can expect and should demand, such as proper medicine labeling, instructions on how to take the medicine, and what amenities should be available in the waiting area.

Strengthening product quality assurance

To improve the National Drug Quality Control Laboratory’s capacity to detect counterfeit and poor-quality drugs circulating in the market, particularly anti-malarials, SURE procured two Minilab® test kits that can produce up to 50 drug tests per day. SURE also procured a TruScan® spectrophotometer for NDA to help strengthen their quality testing in medicines outlets and at ports of entry. The device outputs a product test result in less than three minutes. Over 300 samples of antimalarials were analyzed in April and May 2013 as part of a comparative assessment of the two devices. Another activity to improve quality assurance activity was the creation and implementation of an electronic verification of imports system that

Wholesalers: From Zero to Hero

In 2013, NDA with support from SURE, published new guidelines outlining good pharmaceutical distribution practices, based on World Health Organization guidance. To meet good distribution practices, wholesalers will have to implement quality assurance measures including batch documentation and sales tracking. Also, wholesalers will only be allowed to sell medicines to authorized medicine outlets that will only be allowed to buy from licensed wholesalers. Barring unlicensed medicine providers, coupled with enforcing wholesalers’ and retailers’ responsibilities will contribute to eliminating substandard and counterfeit drugs in the market. The Chief Executive Officer of Abacus Pharma, a leading pharmaceutical wholesaler, said the new practice would take wholesalers from “zero to hero.” He elaborated by saying that previously, wholesalers did not have any quality systems in place, but now, in compliance with the guidelines, they will save lives by guaranteeing that patients receive good quality medicines.

links NDA’s port of entry staff with information on registration and physical inspection and verification.

Increased medicine quality through revised distribution guidelines

According to NDA’s new distribution guidelines, wholesalers have until January 2016 to implement quality assurance measures, including batch documentation and sales tracking. SURE helped NDA orient their inspectors and country wholesalers on the new guidelines and develop a new inspection tool to inspect wholesalers and enforce them. NDA will begin inspecting wholesalers in January 2015, so that the wholesalers will know what they need to change to meet the new requirement by 2016.

MANAGEMENT ACHIEVEMENTS

Increasing management effectiveness required working with stakeholders to identify and prioritize problems, analyze possible solutions, and select and implement evidence-based interventions. For example, SURE substantiated a deeply inequitable EMHS resource allocation system as well as helped the central warehouses identify and address operational inefficiencies. Moreover, SURE's overarching strategy was to assure that the Pharmacy Division would be prepared to monitor and manage sector activities by the end of the program.



WAREHOUSING AND DISTRIBUTION

In 2009, SURE's policy option analysis of Uganda's national EMHS supply system highlighted several challenges, including poor warehouse practices and distribution planning, inadequate flow design and infrastructure, and financial deficits. The analysis emphasized the need to improve the central supply agencies' capacity to ensure optimal availability of essential medicines to the Ugandan population.

STRATEGY

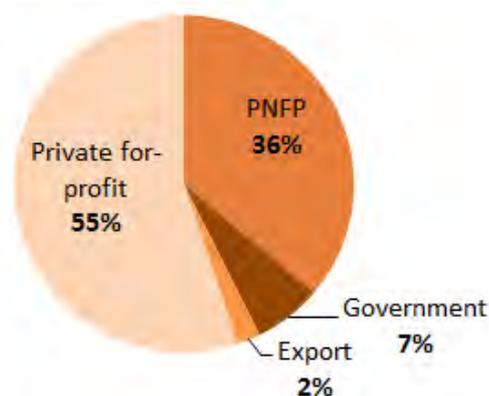
SURE's distribution system strategy was to harmonize the storage and transportation of all pharmaceutical commodities in compliance with NDA's good distribution practice guidelines. Strategic goals were to maintain the integrity of the product from source to final user, reduce order lead-times, and strengthen distribution

management. Interventions focused on improving efficiencies in distribution and transportation planning, installing more robust business technology systems, and building a sustainable M&E framework.

RESULT HIGHLIGHTS

JMS plays a significant role in the health commodity supply chain—one that complements NMS. Historically, its primary customers were church-owned health facilities, but for many years, it has served many public and private sector institutions. JMS also currently handles commodities on behalf of several donors, including the Global Fund, PEPFAR, and the Clinton Health Access Initiative. In 2012/13, JMS served 1,286 distinct customer entities, over 40% of whom were either government or PNFP institutions (Figure 19). SURE's activities to strengthen JMS's operations have helped it increase its efficiency and expand.

Figure 19. JMS customer profile 2012/13



Benefits of the New Enterprise Resource Planning System at JMS

- Integrates finance, warehouse, human resource, and procurement functions to increase operational efficiency
- Easily used to measure key performance indicators and develop customized reports
- Makes use of next-generation web-based technology that allows real-time communication with customers and suppliers

A new enterprise resource planning solution supports JMS growth

SURE collaborated with the Supply Chain Management System project to review both NMS's and JMS's current and future enterprise resource planning system needs. The reviews led JMS to acquire a new system with the requisite technology infrastructure provided by SURE. SURE also seconded an information technology professional who supervised the changeover to the new system, which was launched successfully in July 2013. JMS shared its lessons learned in the assessment–acquisition–installation process at a forum with NMS and other central warehouses.

Business processes optimized and sustained

During the program, SURE assessed warehouse capacity and procedures, inventory management, procurement, and sales functions at both NMS and JMS. At a

follow-up business transformation workshop at JMS, a logistics expert walked managers through their operations to identify processes that did not add value. At least 39% of the forecast-to-replenishment processes were completely eliminated, and the time spent on non-value added activities decreased by 72%.

Other JMS assessment recommendations resulted in streamlined order processing and process flow through internal structural modifications and reorganization. For example, pallet positions have increased within JMS's two existing warehouses by 44% from 2011 to 2013.

To ensure the sustainability of JMS's improvements, SURE helped it create a comprehensive M&E framework with five result areas. Table 5 shows an example of the indicators with baseline performance assessment results for 2012/13. JMS is developing performance targets based on these results.

Table 5. Example of JMS M&E indicators and baseline evaluation results: July 2012–June 2013

Indicator	Definition	Results
Accredited unit coverage	Percentage of accredited units that made a minimum of one purchase at JMS in the year	All accredited health units (n=555): 37%
		<i>Hospital</i> (n=50): 94%
		<i>HC IV</i> (n=11): 73%
		<i>HC III & II</i> (n=494): 31%
Customer satisfaction rating	Percentage total satisfaction criteria score points out of a maximum possible score	80%
Stock availability	Average percentage of stock list items in stock	83%
Employee satisfaction	Percentage total satisfaction criteria score points out of a maximum possible score	65%
Quality incidents	Number of reported EMHS quality incidents	490
Procurement price	Percentage of average international procurement price for a basket of medicines	52%

Providing better customer service

An important area of SURE support to JMS was establishing a system to distribute EMHS to the customer's door. The tasks involved reviewing JMS's products, customers, and operations and evaluating private companies to determine the best way to improve distribution.

The recommendation was to ship from the existing central warehouse directly to facilities (door-to-door) based on customers placing a medicine and commodity order every two months. A pilot in April 2014 demonstrated that shipments could be transported at approximately 5% of invoice value, which was much lower than anticipated. In addition, to-the-door delivery could save the PNFP facilities up to \$17 million annually in costs related to traveling to JMS to collect orders.

MEDICINES FINANCING

In fiscal year 2008/2009, Uganda reportedly had roughly half of the funding needed to provide the medicines and health supply component of the national minimum health care package. However, there were no reliable mechanisms to accurately track or report the financial flows within the health sector. In health facilities, financial management skills were very limited, and staff were unable to monitor their budget allocations or track their credit line utilizations.

The SURE policy options analysis identified inequity in resource allocations as a major policy problem affecting all levels of the health system, but particularly lower level health centers. In 2009/2010, the government instituted the EMHS funding mechanism known as Vote 116. Under this system, NMS receives all funds for EMHS procurement and is responsible for assuring EMHS availability by using 100% of the available funding.

STRATEGIES

SURE's strategy to improve EMHS funding was to optimize the use of available resources, increase the ability of health facility staff to make financial plans and budgets, and strengthen the amount and quality of information available for financial management including documenting the funding gap and trend in donor dependency. Specific activities included identifying financial data sources, mapping public and PNFP financial flows for pharmaceuticals, establishing routine financial

data collection, and developing and measuring performance indicators. To create evidence related to issues around health care equity, SURE studied the relationships between EMHS allocation, patient load, and EMHS availability and weighed the options available to increase an equitable allocation of resources in the pharmaceutical sector.

The policy options analysis recognized the need for a financial and commodity tracking system to facilitate this medicines financing strategy. During SURE, stakeholders developed a concept for the system, which would provide a comprehensive and transparent overview of EMHS financing that would be integrated with other structures, such as the QPPU and pharmaceutical and health information systems. Uganda's Health Policy Advisory Committee approved the concept in 2011, which was a major accomplishment given the existing opacity of EMHS financing; however, political constraints ultimately stalled completion.

NMS gets Orders to Customers Faster

NMS has reduced its lead time for delivery to health facilities since 2009, likely because of stronger medicines management skills at the facilities coupled with the SURE-facilitated introduction of third-party transporters for last mile delivery. SURE's 2010 policy options analysis recommended that NMS review its distribution systems, which at the time involved NMS vehicle delivery direct to hospitals and the district stores. The district and health sub-districts then used their own vehicles to move consignments to the health centers. A feasibility study led NMS to introduce "last-mile" distribution to deliver EMHS from the district store directly to the health facility.



RESULT HIGHLIGHTS

SURE raised awareness on the importance of managing and tracking EMHS funding and budgets at both the MoH and health facilities. Most importantly, SURE conducted research that highlighted the inequity of EMHS funding among different health facilities.

More efficient and effective use of funds

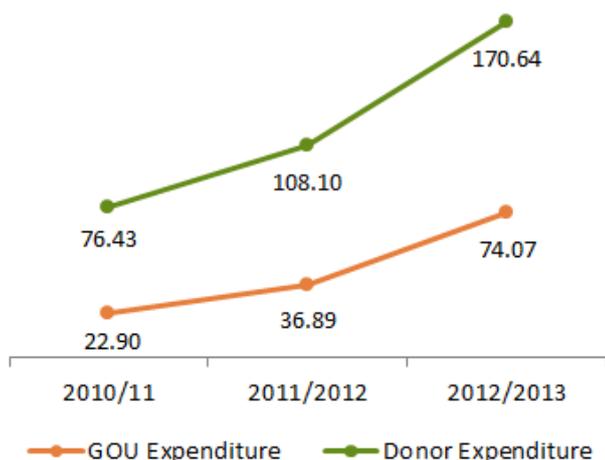
Government spending on EMHS has increased since 2010, facilitated by SURE’s efforts to highlight the funding gap. Government per capita expenditure on EMHS only (not including ARVs, etc.) is about \$2.50 in 2013/2014, up from about \$0.72 in 2006/2007. Donor spending on EMHS has also increased and currently accounts for almost 30% of total EMHS funding. Figure 20 shows increases in governmental and donor spending on EMHS plus public health program medicines, including ARVs, ACTs, and anti-TB. Available funds are also stretching further with a 14% reduction in public sector procurement prices since SURE’s launch.

Most importantly is the prioritization of EMHS funding for primary health (HC II-IV) care both in nominal terms and as a proportion of the available funding. This emphasis helps ensure EMHS availability at the care level serving as the entry point for most patients and where most uncomplicated cases can be treated cost-effectively (Figure 21).

Improving equity of EMHS funding allocation

Resource allocation should strive to maximize health benefits. SURE’s equity study illustrated a wide range of funding allocations per patient with corresponding disparities in medicines

Figure 20. Government and donor contributions to EMHS and public health program medicines funding in millions of US dollars: 2010–2013



availability. For instance, funding allocated per patient varied hugely within the same level of care—HC IV allocations varying nine-fold from UGX 638 to UGX 5,530. A patient cannot receive the same treatment at two HC IVs if one has nine times less money for EMHS per patient than the other. The discrepancy at general hospitals and HC IIs and IIIs was more modest at around three-fold (Figure 22)

The study further documented that an HC II could have the same funding available per patient as a general hospital or even a regional referral hospital. The primary equity challenge is that although facility allocations increase with increasing level of care, allocation does not consider a facility’s patient load, resulting in both poor horizontal and vertical equity. A multi-stakeholder committee is expected to use the study to craft recommendations on how Uganda can move toward a more equitable EMHS funding allocation system.

Figure 21. Nominal and proportional trends in EMHS budgets by level of care: 2009/2010–2013/2014

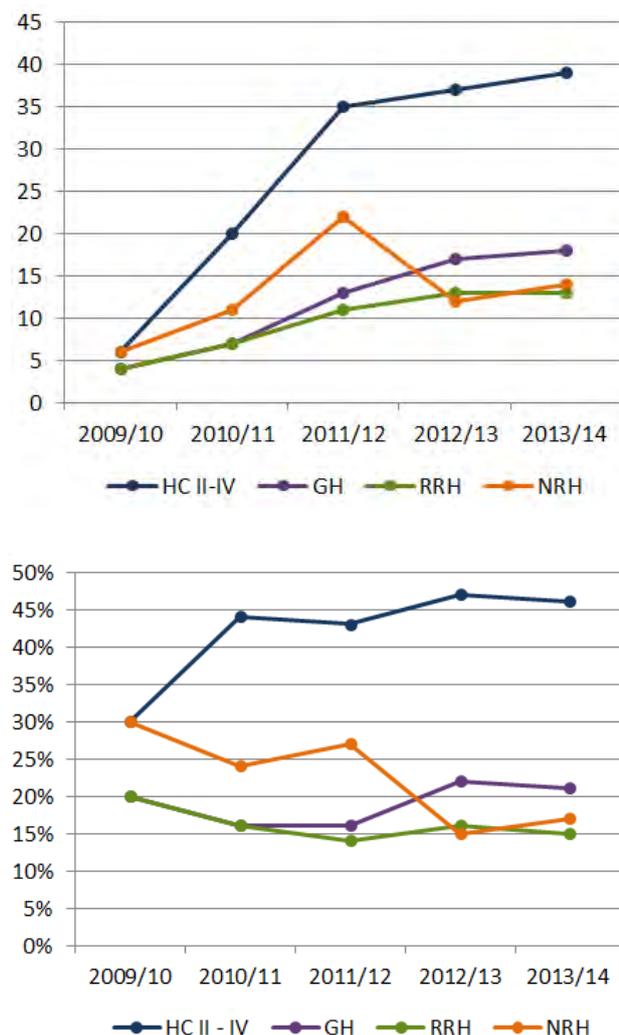
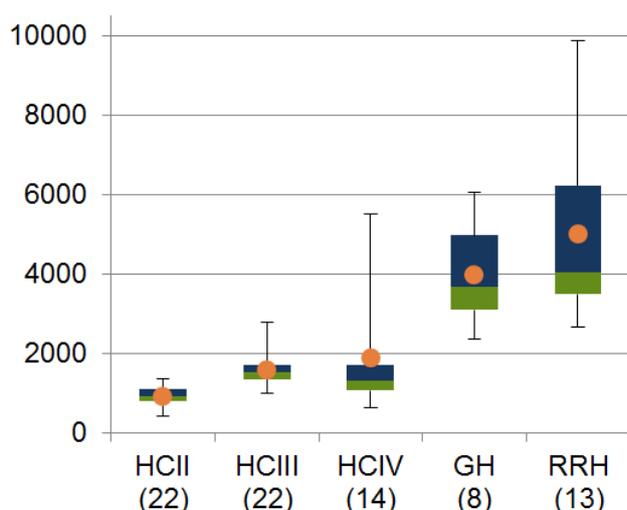


Figure 22. Resource allocation/patient (UGX) by level of care showing average, maximum and minimum



Assessing the kit system

NMS introduced the kit system in June 2010 to ensure that lower-level facilities receive supplies whether or not they can quantify EMHS needs and place regular orders. The kit content has been repeatedly revised within allocated fund limits to better address geographic variations in disease patterns. SURE worked with the MoH to conduct annual comprehensive evaluations of the kit supply system. The 2013 evaluation showed that most items are still either under or oversupplied. Only about 20% of items appear to be adequately supplied which is unsurprising given that kit quantities are not associated with the number of patients served at a specific facility with all facilities at a particular care level receiving the same kit. It is up to the district to redistribute stock between the district's facilities to ensure equitable availability.

Reduced stock-outs and expiry

SURE supported MoH to develop the *Uganda National Redistribution Strategy for Prevention of Expiry and Handling of Expired Medicines and Health Supplies Guidelines*. The strategy was a response to widespread stock imbalances—overstocks in some health facilities and stock-outs of the same items in others—even within the same geographical area. The strategy, which outlines how inter-facility stock transfers should be done, was distributed to all district health offices and public health facilities in SURE districts.

A SURE survey of 30 health facilities at the end of 2013 found that knowledge of the redistribution strategy was good (70%). The

need for redistribution was clearly evident and all health facilities had either donated or received medicines, with hospitals and HC IVs as major recipients and HC IIIs and IIs as major donors. The biggest drivers of redistribution were stock-outs and threats of expiry. Redistribution was also very costly and not budgeted for by districts. Redistribution should be avoided altogether by having more equitable distribution in the first place.

MINISTRY OF HEALTH'S PHARMACY DIVISION PREPARED TO LEAD

One of the Pharmacy Division's primary roles is to improve EMHS management across Uganda by providing policy direction, leadership, supervision, and oversight of activities.

STRATEGIES

SURE's main strategy to build capacity within the Pharmacy Division was to work side-by-side with counterparts on each and every activity related to EMHS in the public sector. With the nationalization of SPARS, a chain of responsibility and accountability in EMHS management has been forged throughout the health system. A peer supervision strategy based on the MoH's existing supervision structure has been put in place to sustain the chain.

Weekly coordination meetings with key pharmaceutical sector stakeholders, including representatives of the Pharmacy Division, SURE, MoH technical programs, US Centers for Disease Control and Prevention, and World Health Organization, have been essential. Another vital component of sustaining these achievements and continuing progress was building the Pharmacy Division's capacity to monitor the pharmaceutical sector and ensure timely access to accurate information for decision making.

RESULT HIGHLIGHTS

The results of these efforts as described below have undoubtedly prepared the Pharmacy Division to take the lead in overseeing Uganda's pharmaceutical sector.

Peer supervision strategy

At the helm of the supervision strategy is the Pharmacy Division, who works with a team of pharmacists based at 14 regional referral hospitals to support MMS in their respective catchment

districts (Figure 23). To develop their skills, SURE provided the regional pharmacists with computers and Internet access and trained them in M&E, pharmaceutical financial management, procurement, supply chain management, SPARS, quantification, and in using select electronic tools. Regional pharmacists oversee the districts and MMS and coordinate regional and district stakeholders. The peer supervision structure cascades with managers at every level handling a reasonable number of supervisees. In addition, clearly defined responsibilities at each level ensure accountability and eliminate grey areas.

Ability to monitor progress in the pharmaceutical sector

One of SURE's major contributions to pharmaceutical sector monitoring was working with the Pharmacy Division to develop 31 indicators and an M&E framework based on the National Pharmaceutical Sector Strategic Plan. The recently finalized 2013 Annual Pharmaceutical Sector Performance Report tracks developments, identifies problems, provides evidence for decision making, and monitors impact on public health.

These findings were presented to the Medicines Procurement Management Technical Working Group and are published on the MoH and SURE websites (www.sure.ug). The development of these indicators also resulted in more EMHS data being included in the most

recent Annual Health Sector Performance Report and Health Sector Strategic Investment Plan Midterm Review Report.

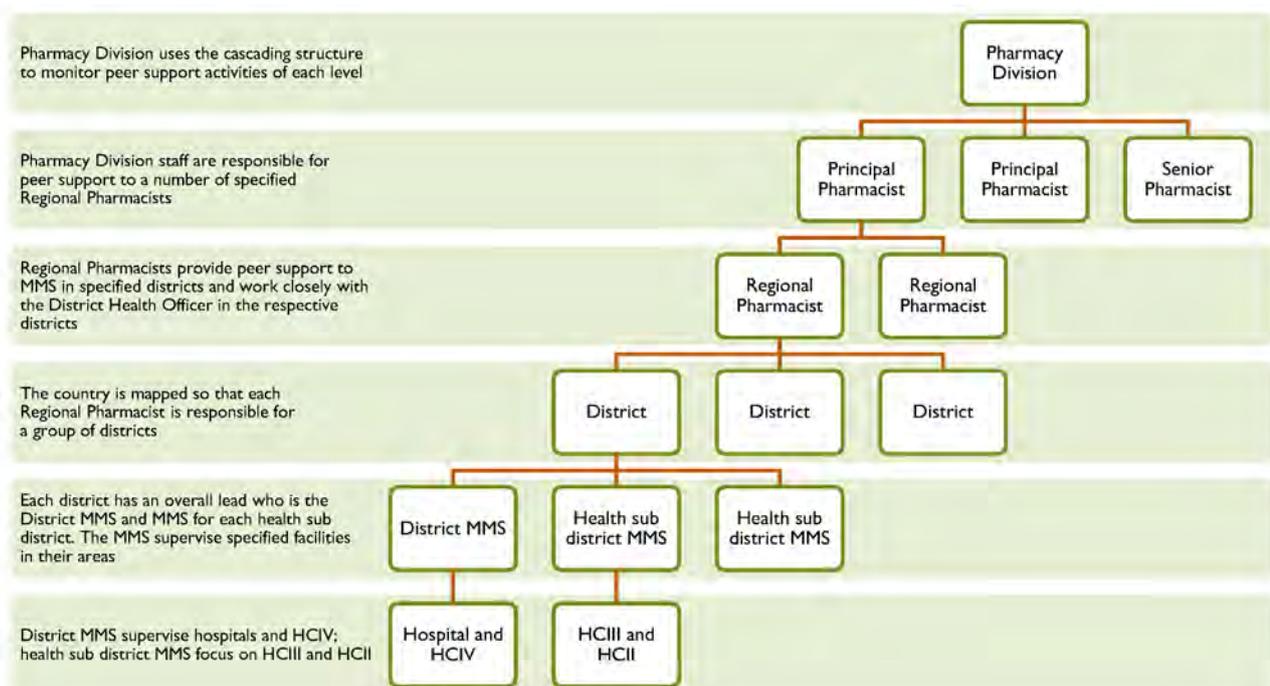
Greater visibility and accountability for medicines management issues

SURE helped the MoH initiate quarterly joint supervision visits with district health officials and MMS. The visits allow district health officers and Pharmacy Division staff to observe district achievements and facility performance, as well as offer on-site mentoring and coaching.

The visits are followed by district logistics coordination meetings that bring together stakeholders in medicines management, including health facility in-charges, district health team members, implementing partners, MoH staff, and district officials. The district quarterly SPARS report is presented at the meeting, which provides a platform for discussing district performance and new developments. For example, district meetings were used to disseminate the redistribution guidelines, launch the *Uganda Clinical Guidelines 2012*, and inform districts about the NDA's GPP certification.

The Pharmacy Division and SURE also hold biannual regional and national pharmaceutical SPARS review meetings with MoH, district, and implementing partner staff to compare their performance, share experiences, and agree on approaches that improve medicines management and use.

Figure 23. SPARS peer supervision cascade



ACHIEVEMENTS IN USING INFORMATION FOR DECISION MAKING

A good pharmaceutical management information system provides the necessary information to make sound decisions at all levels of the sector. Effective medicines management requires policy makers, program managers, and health care workers to use and present information related to EMHS management performance indicators and product procurement among others to determine if limited resources are used effectively. In addition, stakeholders need to be able to easily access and share information, challenges faced, and decisions made.



STRATEGY

SURE believes that one of the most critical factors to assuring an effective supply chain in Uganda is to improve data quality throughout the health system. The objective has been to allow staff members at all levels, from HC II to national level, to access data for analysis and decision making. SURE analyzed information gaps and has been developing an overall system that meets pharmaceutical sector stakeholder needs. Table 6 illustrates how

each level of the health system is using newly available data to support EMHS supply chain functions.

When SURE started, communication between central, regional, and district levels was a major challenge. SURE has facilitated communication coordination and collaboration among health workers, supervisors, and program managers by promoting the use of e-mails, phones, Internet forums, and other technologies.

Table 6. Data sources and uses at different health system levels

	Central	Regional	District/facilities
PIP	Managing medicines	Supporting peers	Supervising
Verification of Imports	Registering imports	Checking imports at border stations	
GPP	Making decisions	Reporting	Inspecting
WAOS	Generating allocation lists and making decisions	—	Ordering electronically
RxSolution	Ordering electronically and monitoring stock status (future)	Managing stock	Managing stock

RESULT HIGHLIGHTS

Over its five years, SURE's work in information technology has resulted in a national-level system that for the first time provides pharmaceutical sector managers access to an extensive source of data for decision making. SURE has also helped individuals increase their knowledge of computers and other technology to ease communication and simplify their work.

Heart of the pharmaceutical management information system

SURE created the pharmaceutical information portal (PIP) as a hub for storing, analyzing, and reporting SPARS data. PIP has dramatically improved data quality with its extensive quality checks during data entry and improved data use as stakeholders have many options for analysis.

MMS use netbooks to collect and upload SPARS data to the PIP. The online web portal also includes a dashboard and several reporting options, which makes it easy for users at each management level to access the information they need (Figure 24).

The dashboard shows the latest status of six SPARS intervention areas. Each intervention area is linked to a drill down menu that provides detailed parameters to narrow data searches and analysis. For instance, from data for a region, a user can drill down a district, a health sub-district,



Isaiah Muhindo, from Mukono district, shows how he uses a netbook for data collection. The netbook also enables him to participate in discussions on the MMS Internet forum.

or an individual facility within that region. In addition, users can retrieve information regarding specific areas of interest, such as rational drug use or medicines availability (Figure 25).

Electronic pharmaceutical management information system in hospitals

SURE, in collaboration with the MoH Resource Center, Pharmacy Division, and hospital staff, conducted an options analysis of 16 different electronic medicines management systems. RxSolution was selected as the best system for Uganda due to its functionality, potential for supporting dispensing and lab testing, and free usage. Furthermore, its widespread use in South Africa provided expertise and lessons learned.

In total, SURE provided computers, Internet modems, and installation of RxSolution for stock management to over 45 health facilities, mainly

Overall, MMS countrywide have submitted over 8,000 SPARS forms for analysis with over 1,300 uploaded using their netbooks

Figure 24: PIP web portal

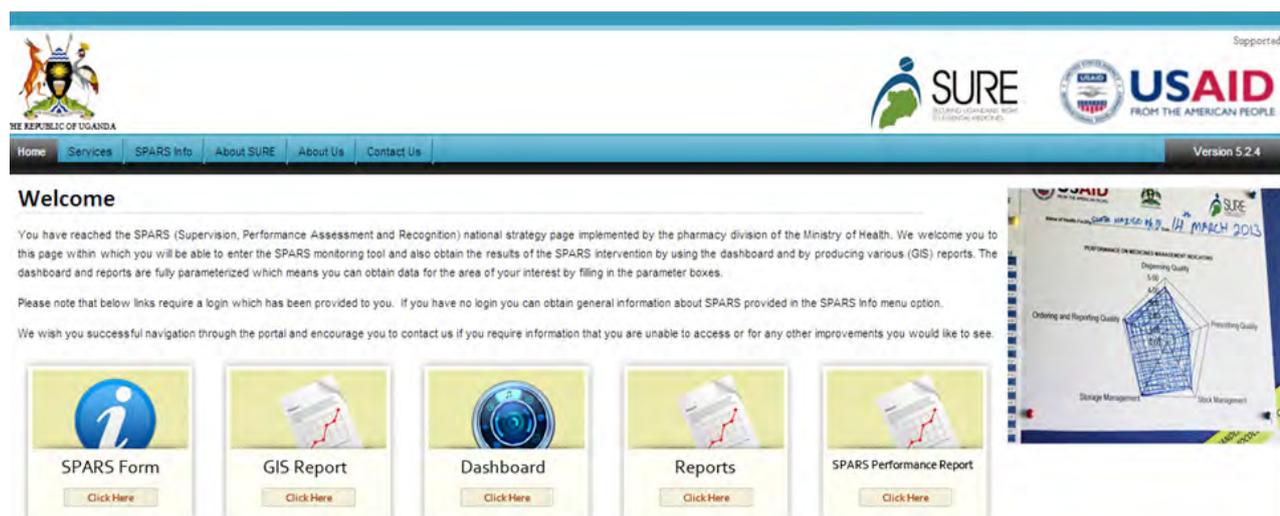


Figure 25: PIP dashboard showing the parameter options



PNFP hospitals and HC IVs. The hospitals will use RxSolution to enter information on orders, receipts, and requirements; pinpoint expired medicines; and provide stock alerts.

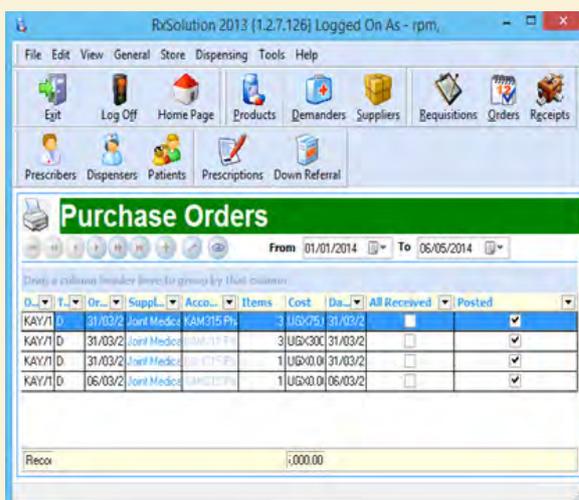
To facilitate implementation of RxSolution, SURE developed the RxBox. It provides a way of installing RxSolution without much technical knowledge and also includes a self-guided learning course to expand users' comfort with computers. Soon, facilities will begin using RxSolution to track prescribing and dispensing, which will generate critical medicine

consumption information for procurement decisions. SURE and the Pharmacy Division are able to provide remote technical support, which reduces travel and support time dramatically.

Technology that promotes collaboration

SURE launched an Internet forum in 2011 after the first MMS had completed their computer training. With 200 active users, MMS used the forum to share both good and poor experiences, ask questions, and assist one another without the limits of geography.

RxSolution



Screenshot from RxSolution showing the Ordering Interface used for ordering from the hospital store.



The RxBox presented by SURE Senior IT Specialist Tom Opio.

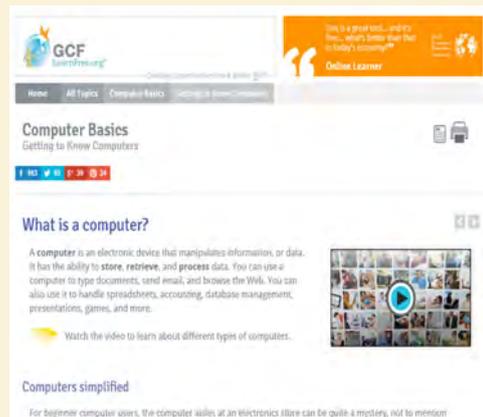
The RxBox has the tools for someone to install RxSolution on their own and also includes a self-guided computer learning course for the hospital user. Installation support can be provided remotely, which prevents the need for traveling to distant sites.

Learning about Computers

To acquaint pharmaceutical sector staff at all levels with how to use computers to perform their work, SURE began collaborating with the Goodwill Community Foundation (GCF) to facilitate this learning process. GCF allowed SURE to use an offline version of their learning tool from GCFLearn.org which contains self-guided courses on:

- Basic computers and email
- Word, Excel, and PowerPoint

In total, SURE has trained over 600 staff members from health facilities, the Ministry of Health, and other organizations on using computers and computer systems.



	Basic Computers 2011-2014	RxSolution 2012-2014	PIP 2013-2014
MoH	18	5	2
MMS	200	5	188
Health Facilities	75	75	–
Implementing Partners	15	15	33
District Health Officers	45	–	–
Total	353	100	223

SURE would like to acknowledge the Goodwill Community Foundation for their great work and continued effort to make learning better and easier for everyone—no matter what their level.

SURE has also established strong information networks to connect the Pharmacy Division, MMS, regional pharmacists, district health officers, and hospital staff. By providing a computer, Internet access, and training on how to use computers, SURE helped ease daily tasks and made communication quicker and more efficient. Such connections will help them support each other with issues ranging from computer use to problem solving.



nabwami Catherine

at 12:22 pm on Sep 2, 2012

[Reply](#) [Delete](#)

Hi to u all,
 This is to remind all MMS and other HCW that most facilities have ACT 6 packaging due to expire in May 2013, please encourage all under your supervision to utilize it by dispensing it to the adults before that date. I think we have overstocks of this category due to the fact that VHTs are managing the under fives at the community level.
 Wish u well
 Catherine Nabwami

okot.peter59@gmail.com

at 9:37 pm on Sep 2, 2012

[Reply](#) [Delete](#)

Catherine you are very correct I also have an over stock ACT -Yellow I think your idea is a solution for my problems thanks

OPPORTUNITIES AND RECOMMENDATIONS

A number of opportunities remain at the end of the SURE program that can be harnessed to sustain program results.

BUILDING CAPACITY TO CARRY OUT SUPPLY CHAIN MANAGEMENT FUNCTIONS

- The concept of SPARS can be applied to improve performance in many areas. For example, the TB and Lab-SPARS strategies have been defined, and the needed structures such as data collection tools and training materials have been developed and tested. Continued technical support and financial resources for full implementation would complete the mainstreaming of TB and lab commodity management at all levels.
- Based on the promising results of the pilot to build financial management capacity, a rollout of the strategy would improve budget and expenditure tracking, cost awareness, and use of funds. Priority ordering of vital items will increase their availability and improve health outcomes. Building health facility staff's financial management capacity will also support the introduction of cost recovery schemes.
- Equipping health professionals to identify causes of poor medicines use in health facilities and linking them with the newly established UNAMU presents an opportunity for professionals to implement evidence-based interventions and share best practices countrywide.

SYSTEM STRENGTHENING AT CENTRAL AND FACILITY LEVEL

- QPPU is valued within the MoH, but it is not yet part of the Ministry's formal structure, which makes it dependent on donor funding. Institutionalization, therefore, is critical to its sustainability.

- Certification of all public and PNFP facilities for compliance with Good Pharmacy Practices has the potential to revolutionize patient care in Uganda. Compelling partners to co-fund the cost of GPP inspections and the cost of addressing deficiencies with NDA as part of their district health service support is a cost-effective and practical option that would allow NDA to continue national inspections, while searching for a sustainable solution.

INCREASING EFFECTIVENESS OF MANAGEMENT SYSTEMS AND STRUCTURES

- Full uptake of JMS's direct distribution service to PNFP facilities has the potential to save the facilities billions of shillings. These savings would not only ease cash flow and enhance operations, but could fund additional EMHS procurement, thereby increasing availability.
- HC IIs and IIIs in SURE districts have significantly improved their medicines management and achieved overall SPARS scores similar to those of higher level facilities. As a result, they have the same capacity to quantify requirements and place orders. Implementing a pull system across all care levels with an equitable budget allocation would mean each facility receives supplies based on need, which would prevent the need for redistribution and take advantage of improved availability of EMHS.
- Establishment of a multi-stakeholder committee under MoH to engage relevant organs of government to operationalize the recommendations of the equity investigation would result in immediate gains in availability of medicines and dramatically reduce the need for redistribution. Such a committee would also need to address attendant issues such as strengthening and rationalizing the referral system which is a prerequisite for a vertical equitable health system.

USING INFORMATION FOR DECISION MAKING

- PIP is invaluable to the pharmaceutical sector because it allows users at any level to generate reports using quality-assured data. However, the MoH does not have the personnel available to provide the high-level technology support needed to sustain the portal. The donor community, which benefits substantially from the system, should address this need.
- If WAOS and RxSolution were fully implemented, stakeholders, including the Pharmacy Division, would have the critical information they need for decision making. Less than 10% of the country's hospitals were using RxSolution at end of the SURE program.
- The pharmaceutical sector needs more electronic data collection tools to facilitate data entry, analysis, and use. NDA, for example, still uses manual inspection tools for the private sector, which reduces efficiency and decreases the availability of needed information.
- To promote sustainability, all training institutions for health care providers should include medicines management in their basic curricula; in addition, pharmacy students should receive computer training related to RxSolution and PIP, as well as pharmaceutical financing training, while lab technicians should have Lab-SPARS in their curriculum.

IMPORTANT SURE PUBLICATIONS

ASSESSMENTS

- Assessment of the essential medicines kit-based supply system in Uganda: May 2011 and December 2011
- Assessment of the TB supply chain system in Uganda: 2012
- Laboratory logistics system assessment: 2012
- Assessment of the physical condition of medicine stores in public health facilities: 2013
- Assessment of the first region-specific essential medicines kit supply system in Uganda: 2013
- Second assessment of essential medicines and health supplies region-specific kit supply system in Uganda: 2013
- TB supplies stock situation survey report: 2014
- Public Health Workers' Experiences and Perceptions of Supervision in Medicines Management:
 - A Qualitative Study from Uganda. 2012
- National and district performance assessment reports on SPARS. Quarterly since February 2012
- Introduction of Uganda National Re-Distribution Strategy for Medicines and Health Supplies: How Effective Have They Been? 2014
- Impact of Supportive Supervision on Medicines Management in Health Facilities in Uganda: A Qualitative Study. 2014
- Implementation of Good Pharmacy Practices in Public Sector Health Facilities in Uganda following Capacity Building in Medicines Management. 2014
- National Longitudinal Study on Supervision Performance Assessment and Recognition Strategy to Improve Medicines Management in Ugandan Health Facilities. 2014

GUIDELINES, MANUALS, AND POLICY DOCUMENTS

- Policy Options Analysis for Uganda's Pharmaceutical Supply System: 2010
- Financial and Commodity Tracking System: 2011
- Management of Medicines and Health Supplies Manual: 2012
- Pharmaceutical Financial Management Manual: 2012
- Uganda National Redistribution Strategy for Prevention of Expiry and Handling of Expired Medicines and Health Supplies: 2012
- Essential Medicines and Health Supplies List for Uganda: 2012
- Uganda Clinical Guidelines: 2012
- Practical Guidelines for Dispensing at Lower Level Health Centers: 2014
- Analysis of Wholesalers Situation and Implementation Plan for GDP in Uganda. 2013

- An Overview of and Recommendations on some Aspects of the Quality System at the National Medical Stores, Uganda. 2013
- TB Management and Performance Improvement Strategy (TB-SPARS). 2013
- Promoting Appropriate Use of Medicines in Uganda through Establishing a Collaborative Uganda Network for Appropriate Medicine Use (UNAMU). 2013
- Peer Strategy: Support Supervision Structure for Medicines and Health Supplies Management. 2014
- Training Manual for Electronic Lab SPARS Management System. 2014
- Improving Equity in Resource Allocation for Essential Medicines and Health Supplies in Public Health Facilities in Uganda: 2014

SECTOR REPORTS

- Annual Pharmaceutical Sector Performance Report 2010/2011–2012/2013: 2014
- Malaria end-use verification reports: 2010, 2011, 2014
- National medicines performance reports published quarterly in 2013
- WAOS reports published bi-monthly since May 2013
- PNFP malaria commodity stock status reports published bi-monthly since February 2013
- MoH Pharmacy Division stock status reports published bi-monthly since 2010
- TB Supplies Stock Situation Survey Report. 2014

MANAGEMENT INFORMATION SYSTEMS

- Report on the status of the MACS and Sage software implementation at Joint Medical Store (JMS) in Uganda
- Development of the pharmaceutical information portal (PIP)—data warehouse and business intelligence system: 2011
- Software requirement specification for the development of district supervision data system, portal, data warehouse and business intelligence system: 2013
- PIP sustainability plan: 2014

QUANTIFICATION REPORTS

- Laboratory Quantification Review and Financing Gap Analysis: 2013
- National quantification and supply planning for ARVS and Cotrimoxazole January 2014–December 2020: 2014
- National Quantification of Laboratory Equipment, Reagents, and other Supplies July 2013–June 2016: 2014
- National Quantification and Supply Planning for Anti-malarial Medicines and RDTs January 2014–December 2016: 2014
- National Quantification of Family Planning and Selected Reproductive Health Commodities July 2013–June 2016: 2013
- National Quantification for Anti-tuberculosis Medicines January 2014–December 2016: 2014

COURSE MATERIALS

- Pharmaceutical financial management—5 days
- Monitoring and evaluation—5 days
- Rational use of medicines—5 days
- Data quality assurance—1 day
- Supply chain management—12 days
- Storekeepers training—5 days
- PIP MMS training on portal and forms—2 days
- Minimum Skills Package for the Pre-service Training of Health Professionals in Management of Medicines and Health Supplies: A Tutor's Handbook: 2013
- PIP System Administration: technical and user manuals: 2014
- Rx Solution Tool Box Set-up Guide

INSTITUTION SPECIFIC

- Options for Strengthening Uganda's Health Supply Agencies: 2010
- Uganda National Drug Authority ICT Strategic Plan: 2011
- Cost and Revenue Analysis for National Drug Authority: 2012
- Supply Chain and Distribution of Medicines: 2012

ANNEX 1. SURE PERFORMANCE MANAGEMENT PLAN INDICATORS

No.	Indicator	2009/10	2010/11		2011/12		2012/13		2013/14	
		Baseline	Target	Actual	Target	Actual	Target	Actual	Target	Actual
1.00 DO3	% of health facilities with all 6 tracer vital essential medicines available on the day of visit	10%	15%	42%	60%	47%	50%	51%	60%	46%
1.01	Average percent availability of 6 individual tracer vital essential medicines at health facilities on the day of visit at the surveyed service delivery points	58%	66%	89%	90%	80%	85%	87%	90%	85%
1.03 DO3	Percent increase in sales of EMHS at JMS	18%	None	-3%	None	11%	None	-5%	3%	-16%
1.11 DO3	Percentage of government funds allocated for credit line EMHS distributed to health facilities (Excluding ARVs and ACTs)	59%	None	75%	None	95%	None	102%	None	101%
1.12	Percentage of government funds released for EMHS out of the total health sector release for the financial year (excluding ARVs and ACTs)	None	None	7%	None	14%	None	13%	None	8%
2.11 DO3	Percent availability of 6 tracer vital medicines (basket) measured over a period of 3 months at National Medical Stores	67%	None	61%	None	75%	None	89%	90%	54%

No.	Indicator	2009/10	2010/11		2011/12		2012/13		2013/14	
		Baseline	Target	Actual	Target	Actual	Target	Actual	Target	Actual
2.13	Percentage of average international price paid by NMS for the procured essential medicines	77%	None	64%	None	46%	None	63%	None	N/A
2.21 DO3	Number of individuals trained in supply chain management and/or pharmaceutical leadership and management	0	200	400	300	331	300	950	310	231
2.22	Percentage of sampled essential medicines failing NDA quality tests	18%*	None	10%	None	8%	None	10%	None	N/A
2.23	Percentage of sampled anti-malaria medicines failing NDA quality tests	7%	None	3%	None	2.7%	None	7%	None	N/A
2.31	Average lead time from ordering to delivery at facility level	57 (13-95)	<60	59 (20-215)	<60	53 (34-105)	<60	46 (21-75)	<60	30 (1-111)
2.32	Percentage of orders placed that are fully filled at NMS	75%	None	75%	None	50%	None	62%	None	68%
3.11	Number of public health facilities supported with technical assistance for pharmaceutical supply chain management.	0	180	507	1200	1230	1565	1257	1700	1681
3.12	Percentage of facility credit line orders submitted on time as per NMS schedule	42%	45%	78%	80%	89%	90%	87%	95%	89%
3.21	Percentage agreement between balance on hand and stock card balance	53%	60%	69%	75%	79%	80%	82%	90%	82%
3.31 DO3	Number of public sector pharmacies accredited in regard to Good Pharmacy Practices (GPP)	0	0	0	80	16	200	134	350	555

ANNEX 2. SURE STAFFING LIST

Name	Title	Original Hire Date	Contract End Dates
Agatha Hamba Muloki	Human Resources Specialist	11-Aug-11	31-May-14
Aida Namakula	Senior Technical Officer	08-Jul-13	28-Feb-14
Alex Tumwesigye	IT Specialist	23-Aug-10	30-Apr-14
Alex Walusimbi Mpanga	Accountant I	15-Aug-11	15-Mar-14
Alfred Schulz	Senior Finance Manager	26-Nov-12	31-May-14
Allen Nabanoba	Monitoring & Evaluation Associate	21-Nov-11	15-Apr-14
Anthony Kirunda	Technical Advisor	08-Nov-10	30-Sep-14
Barbara Muwonge	Technical Officer	10-Jul-12	28-Feb-14
Belinda Blick Karamagi	M&E Specialist	30-Nov-09	30-Sep-14
Ben Okello	Accountant I	27-Jul-11	15-Mar-14
Bernad Baitwababo	Lab Data Analyst	08-Feb-10	07-Feb-12
Bill Elur	M&E/ MIS Coordinator	07-Jul-10	05-May-11
Birna Trap	Project Director III	01-Sep-09	31-Oct-14
Bosco Okello	Capacity Building Program Officer	21-Nov-11	28-Feb-14
Brenda Nalwadda	Senior M&E Advisor	28-Nov-11	17-Feb-13
Carol Achilla	HR Generalist	01-Mar-10	11-Aug-11
Catherine Nahabwe	Operations Coordinator	18-Jun-12	28-Feb-14
Charles Okello	Driver III	02-Apr-12	30-Jun-14
Christine Ayugi Mary	Administrative Coordinator	24-Nov-11	05-Nov-13
Christopher Obonyo	Driver III	06-Dec-10	31-Jul-13
Darlington Muhwezi	Senior Technical officer	24-Jun-13	06-Jan-14
David Baagala Bagonza	Principle Quality Advisor	01-Sep-11	31-Jan-13
David Talima	Capacity Building Advisor	03-Dec-12	31-May-14
Denis Walusimbi	Senior Technical Officer	1-Aug-12	30-Sep-14
Denis Muwonge	Data Specialist	23-Jul-13	28-Feb-14
Denis Okidi Ladwar	Technical Advisor	15-Nov-10	30-Sep-14
Dennis Natumanya Bashukwa	Accountant II	09-Dec-11	25-Aug-13
Derrick Draleku Dickson	Driver III	15-Nov-10	31-Jul-13
Donna Kusemererwa	Principle Technical Advisor	16-Mar-12	04-Jul-14
Dorthe Konradsen	Senior Technical Advisor	01-May-10	15-May-14
Emmanuel Umirambe	Technical Advisor	07-Jul-10	15-Mar-14
Eric Jemera Nabuguzi	Logistics Coordinator	22-Mar-10	13-Apr-12
Esther Mirembe	Operations Coordinator	18-Jun-12	15-Mar-14
Fatumah Nalubowa Ssemujju	Administrative Coordinator	01-Aug-11	28-Feb-14
Felix Tumwesigye	Driver III	10-May-10	30-Jun-14
Fred Kaggwa	Driver III	19-Nov-12	15-Mar-14

Name	Title	Original Hire Date	Contract End Dates
Fred Twinomujuni	Technical Officer	04-Jun-13	28-Feb-14
Geoffrey Olwol	Assistant Accountant- Fort Portal	21-Feb-11	30-Mar-11
George Sekimpi William	Driver III	22-Nov-10	04-Feb-14
Godfrey Tugume Max	Accountant I	17-Jan-11	15-Mar-14
Godfrey Kuboi Kamunyi	Senior Programmer	15-Jul-13	28-Feb-14
Grace Otto Lajul	Project Specialist	22-Apr-13	30-Apr-14
Hakim Walugembe	IT Coordinator	2-Jul-12	31-Mar-14
Hamida Nassimbwa Matovu	Senior IT Associate	02-Aug-10	31-Jul-13
Haroon Seruli	M&E Specialist, PD	20-Aug-12	14-Nov-12
Harriet Mugena	Administrative Coordinator	01-Nov-13	28-Feb-14
Henry Ogwal Jackson	Technical Officer	29-Oct-12	15-Jan-13
Jackie Ajwang	Accountant II	01-Aug-13	31-Aug-14
James Madras	Accountant II	26-Nov-10	15-Mar-14
Janice Namuli	Logistics Specialist	01-Oct-13	31-Jan-14
Jimmy Ondoma	Technical Officer	06-Jun-11	28-Feb-14
John Asaba	Driver III	02-Apr-12	15-Mar-14
John Henry Mukisa	Driver	03-Jan-11	11-Nov-12
Joyce Bakka Nalugwa	Logistics Coordinator- Vertical Programs	12-Oct-09	18-Oct-10
Julian Natukunda	Communications Associate	15-Jun-11	03-Apr-13
Juliet Namugambe Kitutu	Technical Officer RDU	09-Apr-13	15-Apr-14
Juliet Joy Kataibaka	Finance Coordinator	27-Jun-12	31-Mar-14
Julius Paalo	Technical Officer	18-Jul-12	28-Feb-14
Julius Kisembo	M&E Intern	01-Feb-13	30-Sep-14
Justus Kamwesigye	Senior M&E Advisor	01-Jul-13	31-Dec-14
Kim Hoppenworth	Manager IT	15-Apr-11	30-Sep-14
Lawrence Were	Senior Technical Officer	15-Apr-10	25-Jan-14
Lawrence Buyi	Driver III	10-Apr-12	28-Feb-14
Lillian Kikazi Charity	Administrative Coordinator	17-Jul-12	28-Feb-14
Loi Gwoyita	Health System Strengthening/Supply Chain TA	01-Oct-09	20-Aug-11
Lynda Nantongo Mungoma	Technical Officer	03-Jan-11	31-May-14
Mariam Namutebi	M&E Coordinator	3-Jul-12	28-Feb-14
Mark Agaara	Technical Advisor	18-Jul-11	05-Aug-13
Michael Kavuma	Data Warehouse Architect	01-Jun-10	15-Jul-12
Michael Musinguzi	Senior Operations Specialist	04-Jul-11	15-Mar-14
Michael Okidi Okot	Driver III	02-Apr-12	15-Mar-14
Mohammed Abdul Khalid	Deputy Director	02-Nov-09	15-May-14
Monica Amuha Grace	Senior Technical Officer	12-Sep-11	30-Sep-14
Morris Okumu	QPPU Coordinator	22-Mar-11	15-May-12
Moses Atwine	M&E Specialist	01-Sep-09	26-Oct-09
Moses Kaweesa	Driver IV	18-Sep-09	30-Sep-14
Moses Bagyendera	LMIS Specialist	03-Mar-10	07-Jan-11
Musa Mukulu	Driver III	01-Dec-12	15-Jul-14
Pamela Achii	Technical Officer	13-Aug-12	31-Jan-14
Patricia Naluggwa	Office Assistant I	01-Aug-09	30-Sep-14
Patrick Kakembo	Senior MIS Advisor	01-Nov-12	31-Oct-13

Name	Title	Original Hire Date	Contract End Dates
Peter Mugagga	Senior Operations Officer	01-Jun-10	15-Oct-14
Peter Muwanga	Senior IT Specialist	07-Jul-10	30-Sep-14
Peter Olungat	Driver III	02-Apr-12	15-Mar-14
Petra Schaefer	Senior Technical Advisor	01-Feb-10	30-Sep-14
Philip Kasibante	M&E Intern	08-Jul-13	28-Feb-14
Rajab Musitwa	Technical Officer (Eastern)	02-Apr-13	28-Feb-14
Rashid Ssimbwa	Driver III	30-Jul-13	15-Mar-14
Richard Semakula	M&E Specialist	03-Mar-10	31-Oct-11
Richard Batamwita	Monitoring & Evaluation Specialist	14-May-12	15-Mar-14
Richard Bidong	Driver III	05-Sep-11	28-Feb-14
Robert Opira	Accountant, Mbale	06-May-13	28-Feb-14
Sadat Gabula	Senior Technical Officer	11-Jul-11	15-Mar-14
Samuel Omalla	Technical Officer	15-Nov-10	28-Feb-14
Samuel Balyejjusa	Senior Technical Officer	03-Sep-12	31-Jan-14
Samuel Kakembo	M&E Coordinator	18-Jun-12	28-Feb-14
Sanyu Kibuka	Project Specialist	26-Nov-12	15-Apr-13
Sarah Nakandi	Senior Operations Specialist	01-Sep-09	01-Feb-14
Sarah Nabukalu	JMS M&E Intern	08-Jul-13	30-Sep-14
Saul Kidde	Deputy Director, Project Management	01-Sep-09	07-Feb-13
Scovia Bacia	Accountant	04-Jan-10	14-Oct-11
Shaquille Sekalala Moses	Senior Data Specialist	15-Feb-10	17-Jan-14
Sophie Naluzze	Accountant (Central)	02-May-13	28-Feb-14
Stella Pacuto	Logistics Coordinator	20-Aug-12	31-Dec-13
Stella Naiga	M&E Intern- JMS	01-Feb-13	12-Jul-13
Stella Nakabugo	Senior Project Associate	21-Nov-11	15-May-14
Stephen Kadde	Logistics Officer	22-Mar-10	31-Jul-12
Stephen Asiimwe	Driver III	30-Jul-13	13-Jan-14
Stewart N. Walusimbi	M&E Intern	01-Feb-13	25-Feb-14
Susan Nambi Khasoma	Operations Coordinator	05-Sep-11	30-Sep-14
Susanne Kalema Nantale	Senior Logistics Associate	15-Apr-13	25-Jul-13
Timohty Sekamatte	Driver III	08-Feb-10	30-Sep-14
Timothy Nuwagaba	Technical Advisor	15-Nov-10	15-Mar-14
Tom Opio	Senior IT Specialist	26-Sep-11	30-Sep-14
Valerie Remedios	Senior Technical Advisor	05-Jan-13	15-Jul-14
Victoria Nakiganda	Technical Advisor	14-Oct-09	22-May-14
Vinh Nguyen	Finance and Admin Manager	12-Jan-10	05-Oct-12
Yuki Kimura	Intern	04-Apr-13	23-Aug-13



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