



SECURING UGANDANS' RIGHT TO ESSENTIAL MEDICINES (SURE) PROGRAM

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Policy Options Analysis for Uganda's Pharmaceutical Supply System

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FOREWORD

This report is developed by Securing Ugandans' Right to Essential Medicines (SURE) program together with the Ministry of Health's Pharmacy Division. The report represents the outcome of an in-depth review of the pharmaceutical sector undertaken as part of a policy option analysis (POA).

The POA assesses the public sector pharmaceutical supply chain from central to lower levels and identifies challenges, constraints, and alternatives to reducing waste or inefficiencies in the sector with view toward improving supply chain functions and increasing access to essential medicines and health supplies. The analysis was undertaken in close collaboration with Ministry of Health and key stakeholders such as National Medical Stores, Joint Medical Stores, Ministry of Finance, implementing partners, and donors. Although the analysis mainly focuses on the pharmaceutical sector and the supply chain, the findings are relevant to health care in general and will be valuable especially to Ministry of Health vertical programs, implementing partners, donors, policy makers, academics, and officials involved in financing and managing health programs.

While recognizing that many types of resources are needed reduce Uganda's morbidity and mortality and to attain health-related Millennium Development Goals, this POA highlights the important role pharmaceuticals play in providing health care—after salaries, pharmaceuticals represent the other major expenditure. Therefore, viewing pharmaceuticals in the broader context of health care is important both to characterize the present situation, but also to estimate the future needs.

The POA assesses the financial gap in providing essential medicines and supplies and identifies specific areas for optimizing the use of the existing resources, procedures, processes, and systems. Focus is on the supply chain, but there is also room for reducing waste through improvements outside the supply chain, such as improving health workforce management and performance, improving rational use of medicines, and practicing good governance.

Cost escalation in the health sector is a challenge faced by other countries in addition to Uganda. However, in Uganda's case, particular factors that strain existing budgets include high fertility and population growth, the HIV/AIDS epidemic, high malaria prevalence, and the introduction of new treatment regimes especially related to HIV/AIDS and malaria.

Improved access cannot be solved in isolation, but requires a high degree of collaboration and coordination among public and private sector entities including Ministry of Health programs, supply chain organizations, implementing partners, districts, facilities, and the communities. The success of the POA is a result of combined efforts and good collaboration among all the health-related partners with whom Management Sciences for Health is happy to be a part.

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Aben Kisoje	Drake Mugabe	Kevin Croke	Rita Namagala
Aidah Namukula R	Eddie Mukooyo	Khalid Mohammed	Robert Downing
Alfred Acanga	Edith N Kakuba	Kinny Nayer	Robert Ngobi
Alice Lamwaka Veronica	Emily Katarikawe	Kintu C	Robert Okello
Allen Asimwe	Emuron Faustus	Kuteesa Bisaso	Rodney Tabaruka
Allen Mukhwana	Eric Nabuguzi	Lali Ziras William	Romano Fernades
Andrew Cohen Nsubuga	Esa Weere	Lawrence Mumba	Ronald Businge
Anna Nakanwagi	Esther Nakkazi	Lawrence Were	Rosette Mutambi
Anna Spindler	Eunice Nalubanga	Loi Gwoyita	Said Karama
Apollo Muhairwe	Evan Klaus	Luc Geysels	Samuel Omalla
Arnold Kabbale	Fitti Weiglass	Mary Namubiru	Sarah Byakika
Atanasius Kakwemeire	Flavia Nalubega	Micheal Ojja	Sarah Nakandi
Aziz Maija	Frans Bosmann	Morris Okumu	Saul Kidde
Beckice Gohag	Freddie Kasirivu	Morris Seru	Seraphine Adibaku
Belinda Blick	Geoffrey Nalima	Moses Bagyendera	Seyoum Dejene
Benon Wanume	Geoffrey Owora	Moses Muwonge	Sharon Acen
Bhaivesh Ghodaswen	Gideon Kisuule Musoke	Moses Ndhaye	Simon Omoding
Blair Mureebe	Grace Nakanwagi Sekabira	N Paranie Tharan	Solome Nampewo (Dr.)
Bosco Okello	Gune Dissanayake	Neville Okuna O	Sowedia Musingo
C E Ndhlovu	Helen Ndagije	Okware Joseph	Stephen Kadde
Cathy Sheilah Nabukeera	Ibrahim Amin	Park Song J	Stephen Otago
Celestino Obua	Isa Mayanja	Paul Hamilton	Taddeo Bwambale
Charles Bizi	Isaac Ezati	Paul Waako	Thomas Obua
Charles Sebikali	Jacinta Sabiiti	Pemola Cris	Timothy Musila
Chris Sembagare	Jackie Idusso	Petra Schaefer	Tom Tenywa
Christine Mwangi	Jackson Henry Ogwal	Petricle Mudoola	Umaru Ssekabira
Christopher Alumai	James W Tamale	Philip Byaruhanga	Valerie Remedios
Clare Asimwe	Jeannette Higham	Polly Mugisha A	Vento Ogora Auma
Claudia Hudspeth	John Mbabazi	M A Otim	Victor Agaba
Denis Kibira	Joseph MangUGXo	Rehemah Nakawombe	Victoria Nakiganda
Diana Atwine	Joseph Mwoga	Richard Odoi Adome	Vivienne Mulema
Dithan Kiragga	Julius N Kalamya	Richard Semakula	Warren Mukiza
Dorothy Adeke	K Hoppenworth	Richard Waya	Wilson Nyegenye
Dr. Mulline	Kate Kikule		Zainab Akol

ACRONYMS

ACT	Artemisinin-based combination therapy
ARV	Antiretroviral
CDC	U.S. Centers for Disease Control and Prevention
CHAI	Clinton Health Access Initiative
Danida	Danish International Development Agency
EMA	Essential Medicines Account
EMHS	Essential medicines and health supplies
FY	Financial year
GAVI	Global Alliance for Vaccines and Immunization
HC	health center
HSSP	Health Sector Strategic Plan
JMS	Joint Medical Stores
MAUL	Medical Access Uganda Limited
MoFPED	Ministry of Finance Planning and Economic Development
MoH	Ministry of Health
MSH	Management Sciences for Health
MTEF	Medium-term expenditure framework
NDA	National Drug Authority
NGO	Nongovernmental organization
NMS	National Medical Stores
NPSSP	National Pharmaceutical Sector Strategic Plan
PCCP	Public cash and carry pharmacy
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PHC	Primary Health Care
PMI	President's Malaria Initiative
PMTCT	Prevention of mother-to-child transmission
POA	Policy options analysis
PPDA	Public Procurement and Disposal of Public Assets Authority
SCMS	Supply Chain Management Systems [project]
SOPs	Standard operating procedures
SURE	Securing Ugandans' Right to Essential Medicines [program]
SWAp	Sector wide approach
TB	Tuberculosis
UGX	Uganda shilling
UHMG	Uganda Health Marketing Group
USAID	U. S. Agency for International Development
USD	U.S. dollar
VEN	vital, essential, necessary
WHO	World Health Organization

EXECUTIVE SUMMARY

The U.S. Agency for International Development established the Securing Ugandans' Right to Essential Medicines (SURE) Program to support the commitment of the Government of Uganda and the Ministry of Health to improve access to essential medicines and health supplies. The SURE strategy is designed to improve Uganda's supply chain performance from the top of the health system to the bottom, working on three streams: policy and finance reform, supply chain system strengthening, and capacity building. A major component of SURE is a policy option analysis (POA), which combines a characterization of the health and pharmaceutical sector with total cost analysis and indicator-based performance measurement.

The POA began in the fourth quarter of 2009. In Kampala on April 15–16, 2010 SURE held a conference to present the analysis findings to a broad audience and to consider proposals for action. The conference resulted in the formulation of concrete proposals that will form the basis for a detailed implementation plan and stakeholder commitments to the process.

The objectives of the POA were to—

- Analyze the pharmaceutical supply system in Uganda in terms of system performance and where possible, apply performance indicators
- Identify innovative options to improve poorly performing systems, operations, or practices within the supply chain
- Analyze the total costs related to the present operations and compare them to the total estimated costs of the new options
- Identify barriers such as policies, laws, or regulations that hinder the suggested options, such as levels of funding; selection, quantification, procurement, storage, and distribution
- Analyze the viability of options for improving the supply system and the interventions necessary to put them into practice

SURE used the following information and techniques to compile the POA—

- Review of documents and reports from prior consulting engagements, previous pharmaceutical programs, and assessments undertaken multiple ministries, donors, and organizations
- Review of existing policies and regulations including the Public Procurement and Disposal of Public Assets Authority (PPDA) regulation
- In-depth interviews with staff from multiple government entities, key donors in the pharmaceutical sector, private sector distributors, procurement agencies, and implementing partners
- Visits to the National Medical Stores (NMS), Joint Medical Stores (JMS), and other procurement and storage agencies involved in the public sector supply chain to review and assess procedures, tendering processes, ordering, storage and distribution practices, and financial viability
- Survey of product pricing and assessment of district-level supply chain management, district orders, expenditure and cost analyses, third- party distribution costs, and other supply chain performance indicators

- Visits to hospitals to obtain information on availability, stock-out levels, budget allocations, expenditure prioritization by product category, inventory management, information on availability of tracer medicines, and private wings

Over nearly two decades in Uganda, the provision of medicines and health supplies in the public sector has been determined largely by a pattern set by legislation in 1993, with ad hoc adaptation to address issues as they arose. The results of the POA indicate that it is necessary and feasible to carry out a coordinated restructuring of the pharmaceutical sector. The restructuring must address not only the serious gap between available financing and actual need, but also weaknesses in current operational structures and opportunities for new approaches, either on an experimental or a definitive basis.

The POA is organized into four sections—

- Introduction and health sector background
- Pharmaceutical sector context with emerging trends
- Methodology
- Core POA analysis of supply chain and flows, financing, availability, pricing, NMS operations, procurement, storage, and distribution

Following is a summary of the recommendations related to moving forward with reform.

Supply chain and flows

- Strengthen supply chain management
- Centralize quantification and procurement planning through establishment of a national-level Quantification and Procurement Planning Unit situated within the Ministry of Health
- Integrating and harmonizing the quantification and procurement planning activities and methods
- Coordinate donor supply systems through harmonization and streamlining and reducing parallel systems, (quantification, procurement, storage, distribution and reporting)
- Change supply chain structure and system change

Pharmaceutical finance

- The health sector is grossly underfunded; estimates indicate that only 30% of the Health Sector Strategic Plan (HSSP) I financing requirement was met.
- The trend in government health expenditure over the HSSP II period does not indicate that the funding gap will close.
- A significant proportion of donor funding remains off-budget, which significantly affects reported per capita expenditure on health.
- 60% of health commodity financing is donor dependent.
- Government and donor contribution to the health sector are not prioritized or aligned, resulting in duplication and inefficient resource allocation.
- 50% of the total national health expenditure is out-of-pocket, which affects the poorest segment of society.
- 58% of this expenditure is committed to the purchase of pharmaceuticals.
- The total government and donor financing for essential medicines and health supplies (EMHS) including ARV, TB and Malaria in 2008/09 was equivalent to 4.3 U.S. dollars (USD) per capita.
- Availability and accessibility of financial spending data is greatly limited;

- There is a need for a mechanism to routinely track financial data and commodities to facilitate planning and policy formulation.
- Develop systems that can be used to collect data on public sector EMHS financing (government and donor sources) to facilitate planning and optimize resource allocation, and provide necessary financial inputs to support and strengthen procurement planning and quantification.
- Establish capacity at all levels in pharmaceutical financial planning and management.

Availability

- Narrow the gap between what is needed and what is available by strictly prioritizing procurement and by classifying the list of EMHS according to importance or essentiality used as a prioritization approach.
- Develop essential lists also for essential supplies and laboratory supplies
- Increase the funds available for EMHS by at least USD 1 per capita and minimize waste, leading to more funds becoming available for EMHS procurement. Increased funding can be achieved through increased government/donor contribution or patient contribution combined with reduced waste and increased effectiveness and efficiency or
- Develop and support alternate financing systems including private wings, user fees, health insurance, and community resource mobilization as identified in the National Health Policy 1999 and the HSSP II.
- Explore the possibility of ensuring increased availability of a Vital EMHS through public sector and at the same time allow for establishment of public sector cash and carry out lots for sale of essential supplies that are not classified as vital

Pricing

There is a need to develop public-sector sales at affordable prices; this might be attained by applying lower mark-ups combined with reduction of other expenses, possible through private wings and public sector cash and carry outlets.

NMS operations

- Revise handling fee percentages
- Become an approved Ministry of Finance Planning and Economic Development supplier

Procurement

- Enact a special regulation to supplement the PPDA rules that deal with the special needs of medicines procurement
- Identify possible PPDA regulations revisions to allow implementation of the proposed options and increase NMS performance
- Improve framework agreements
- Increase thresholds for different procurement methods
- Split tender awards
- Consider outsourcing hospital specialist procurement

Storage

- Improve carton management
- Improve temperature management
- Improve information management

- Consider building a new facility

Distribution

- Explore the possibility of a JMS/NMS joint distribution system
- Explore direct delivery of bulk items
- Outsource distribution services to third party providers
- Strengthen in-house distribution management
- Explore to the door delivery
- Provide vehicles to the districts

1. INTRODUCTION

Provision of health care services in Uganda has long constituted a major challenge with low and decreasing medicines availability, low staff morale, weak supply chain management, poorly implemented stock management, and low reporting rates.

A recent four-year survey revealed that 32 to 50% of medicines essential for treating common diseases such as malaria, pneumonia, diarrhea, HIV/AIDS, tuberculosis (TB), diabetes, and hypertension are not available.¹ The percentage of facilities across Uganda *without* monthly stock-outs decreased from 35% to 28% from 2005 to 2007² and with a further decrease expected. At the same time, the number and volume of medicines and supplies in the supply management system increased in line with scaling up antiretroviral (ARV) and TB treatment, reaching the capacity to manage, procure, store, and distribute essential medicines and health supplies (EMHS). Several parallel supply systems have been established as a strategy to cope.

On that basis, the U.S. Agency for International Development (USAID) in collaboration with the Ministry of Health (MoH) developed the Securing Ugandans' Rights to Essential Medicines (SURE) program as a follow-on to the previous DELIVER project. SURE's aim is to assist the Government of Uganda and the MoH's commitment to strengthen the national pharmaceutical supply system to ensure that Uganda's population has access to good quality essential medicines and health supplies.

Recognizing the complexity and importance of ensuring the availability of EMHS, SURE undertook a thorough assessment of the pharmaceutical sector that looked at cost effectiveness and performance at the various steps in the supply chain and that could identify innovative policy options to address the challenges. The options would also build on experiences from other countries and recognize that new ways of thinking would be needed to improve the EMHS supply system.

The policy options analysis (POA) is organized into four sections: 1) introduction and health sector background, 2) pharmaceutical sector context with emerging trends, 3) methodology, and 4) core POA analysis of supply chain flows, financing, availability, pricing, National Medical Stores (NMS) operations, procurement, storage, and distribution. For each part of the analysis, the report provides background, situation analysis, and possible options.

The objectives of the POA were to—

- Analyze the pharmaceutical supply system in Uganda in terms of system performance and where possible, apply performance indicators
- Identify innovative options to improve poorly performing systems, operations, or practices within the supply chain
- Analyze the total costs related to the present operations and compare them to the total estimated costs of the new options
- Identify barriers such as policies, laws, or regulations that hinder the suggested options, such as levels of funding, selection, quantification, procurement, storage, and distribution
- Analyze the viability of options for improving the supply system and the interventions necessary to put them into practice

¹ Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010

² MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2007/2008, October 2008.

2. CONTEXT

The following section provides a brief background to the POA by describing key aspects related to Uganda's population and disease patterns, health care system and reforms, economy and health financing, and pharmaceutical sector.

2.1 Population and major health concerns

Uganda has a population of over 30 million and a total fertility rate of 6.7 births per woman in 2006, which is among the highest in the world. Uganda has one of the youngest populations in the world also, with over one-half under 15 years of age (median in 2005 was 14.8 years).³ The high population growth is a major challenge to providing health care. Health expenditures will continue to grow in line with population growth, which is estimated to be more than 3% by 2025. The young and growing population creates a huge demand for maternal and child health, immunization, and adolescent services.

Major causes of death in Uganda in 2002 were HIV/AIDS (24%), followed by malaria (10%), respiratory infection (10%), diarrheal diseases (8%), childhood cluster diseases (5%), TB (4%), and maternal conditions (2%).⁴ Though HIV/AIDS still remains a significant burden it is no longer the major cause of death. The most common cause of death of children under five is malaria followed by perinatal and early neonatal conditions, meningitis, and pneumonia; measles and diarrhea are no longer among the top causes.⁵ Uganda has started to experience a rise in injuries and noncommunicable diseases, especially cervical and breast cancer, diabetes, and cardiovascular disease, as people live longer and adopt new lifestyle behaviors.

Of all the main drivers of health spending, the HIV/AIDS epidemic is probably the highest priority with the most significant cost implications. Without strengthening prevention efforts, Uganda's treatment program is unlikely to be sustainable: 500,000 infected persons already need antiretroviral therapy, and more than 100,000 new infections occur annually. In 2006, the government contributed an estimated 7% of the costs for the HIV/AIDS national response, with the rest of the funding coming from external partners, mainly the U.S. government.

Malaria is highly endemic in Uganda, with 63% of the population living in high transmission areas and 25% in moderate transmission areas. In 2005 to 2006, one half of the population that fell ill reported malaria or fever as the major source of illness.⁶ The recently introduced artemisinin-based combination therapy (ACT) is costly, and without appropriate diagnosis and testing, Uganda cannot afford to provide treatment.

In spite of good access to health facilities, health outcomes vary considerably. Life expectancy in Uganda is about 51 years. However, some districts have life expectancy estimates that exceed 60 years and others have life expectancies less than 30 years.⁷ This large difference may relate to the quality of the health care services provided.

³ Uganda Demographic and Health Survey, 2006.

⁴ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

⁵ UBOS Uganda, Demographic and Health Survey, 2007.

⁶ UBOS Uganda, Demographic and Health Survey, 2006.

⁷ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

2.2 Health care system and decentralization

The health system comprises public, private not-for-profit, and private for-profit providers as well as traditional and complementary practitioners. National and regional referral hospitals report to the central government; general hospitals and health center (HC) levels I–IV report to local governments. The districts are further divided into health sub-districts, which are administered at the HCIV level. The private not-for-profit providers are predominantly faith-based (78%) and are administered nationally through their respective bureaus and locally by the diocesan boards. The private for-profit providers predominantly include clinics, but also include drug shops and vendors operating informally. The number of private not-for-profit providers and nongovernmental organizations (NGOs) has increased significantly to address HIV/AIDS.

The 2006 health facility inventory by the MoH reported 3,237 health facilities countrywide—71% public, 21% private not-for-profit, and 9% private for-profit. However, the number of private for-profit providers in central region and Kampala is probably much larger. Over 90% of such private facilities are clinics that provide outpatient services. Although the public sector health infrastructure has expanded, many health facilities are not fully functional because they lack equipment and staff and are poorly maintained. MoH states that up to 40% of HCIVs are not functioning optimally. In addition, Uganda faces a serious shortage of personnel in its health workforce. For every 100,000 citizens there are 8 physicians, 55 nurses, 1.3 pharmacists, and 16 midwives. The low numbers are compounded by poor distribution with a predominantly urban bias.⁸

An important aspect of the health sector reform introduced in 1997 has been decentralization, with transfer of fiscal, administrative, planning, and implementation responsibilities to local government. The creation of new districts has substantial implications in terms of establishing new facilities and on the recurrent budgets. In 2009 there were 80 districts, 23 of which were created in the previous two years. The number of districts has increased further reaching 116 in 2010. The role of MoH's central level is to develop policy and strategy, formulate standards, monitor quality assurance, carry out monitoring and evaluation, and mobilize resources. In regards to pharmaceuticals, the responsibility is placed with the MoH's Pharmacy Division, which guides and monitors performance at health facility level including hospitals. Other key stakeholders include NMS, Joint Medical Stores (JMS), and National Drug Authority (NDA).

The sector wide approach (SWAp) was applied to mobilize funds, improve efficiency and effectiveness, ensure sufficient human resources, implement the health sub-district concept, strengthen public-private partnerships for health, and improve supply, distribution, access, and rational use of medicines and supplies. The SWAp is regarded as successful⁹ with improved government collaboration with private not-for-profit providers and better use of EMHS funding through the creation of the drug credit line. In addition, HCIVs were upgraded and HCIIIs constructed as part of the health sub-district concept, leading to improved access to health services since 2001. For example, the percentage of population within a 5-km radius to health care services improved from 57% to 72% from 2000 to 2007, with the average distance dropping to 4.1 km. Increased use of the public sector was seen after 2001 when user fees were abolished, but private sector increases were also seen.¹⁰ Government data from 2003 analyzed by Xu and colleagues indicate that when sick, 53% of people turn to the private sector for treatment, 24%

⁸ The World Health Organization (WHO), Statistical Information; Geneva: WHO, 2007.

⁹ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

¹⁰ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report FY 2006/07. October 2007.

to the public sector, 4% to other, and 19% do not seek care.¹¹ These figures show an increase in both public and private sector usage since 1997 because a larger proportion of people sought health care in 2003 compared with 1997.¹²

The decentralization process needs additional strengthening: MoH and the districts have experienced obstacles including poor involvement of local leaders, insufficient management and planning capacity, low implementation rate, and most importantly, insufficient funding and resource allocation. Consequently, most districts cannot execute their mandates, and the central level has yet to institutionalize its new role.

2.3 Economy and health financing

Gross domestic product growth in Uganda has been an impressive average of 6 to 7% per year since 2007. In the last two decades, Uganda's overall economic performance has been among the best in Africa and even globally. However, per capita income grew by substantially less, approximately 2.8%, and by 2007 was only 320 U.S. dollars (USD). Thus, Uganda remains a poor country, but with a decline in poverty rate from 44% to 31% between 1997 and 2006.¹³

The health sector is heavily under-funded in comparison with what is needed for implementing the National Health Policy and Health Sector Strategic Plan (HSSP) and attaining the Millennium Development Goals. Based on World Health Organization (WHO) estimates, Uganda's total health expenditure per capita was USD 25 in 2006: about 30% was funded by external sources, 38% was out-of-pocket, and the remainder, about 30% was government funding.¹⁴

Uganda spent more on health care as a share of gross domestic product than average for sub-Saharan Africa. However, to fully finance its HSSP, an increase in per capita funding is needed. The prospects for Uganda to attain the level of funding needed to meet its national health goals and the Millennium Development Goals are limited. In 2006, Uganda allocated 11.6% of the 2008/09 of the government budget to health, which was less than the Abuja target of 15%. The government spends about USD 15 per capita, which is substantially less than the estimated USD 28 needed to fully finance implementation of the health sector strategy and USD 34 per capita that the WHO Commission on Macroeconomics and Health recommends that low-income countries spend on health.

Medicine procurement accounts for over 30% of total expenditure on health¹⁵ now amounting to 10.7% of gross domestic product¹⁶ and is the second largest expense after staffing. The estimated value of all drugs in the private and public sectors and including imports for sale, donations, and locally manufactured products is USD 120 million.¹⁷

Frequent drug stock outs at public facilities imply that users often have to pay out-of-pocket for drug expenses. Out-of-pocket health expenditures, which have doubled between 2002 to 2006, amounted to

¹¹ Xu, K. D.B. Evans, P. Kadama, J. Nabyonga, P. Ogwang Ogwal, P. Nabukhonzo, et al. 2005. Understanding the Impact of Eliminating User Fees: Utilization and Catastrophic Health Expenditures in Uganda. *Social Science & Medicine* 62(2006):866–876.

¹² Management Sciences for Health. The East African Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

¹³ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

¹⁴ Ibid.

¹⁵ MOH (Ministry of Health, Uganda). The 3-year rolling procurement plan for essential medicines and health supplies. Including road map for harmonization, integration and alignment (FY 2006/07-2008/09), July, Ministry of Health, Government of Uganda. 2007.

¹⁶ MOH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009.

¹⁷ Elliot, C. Private Sector Mapping Uganda, Mission Report, Uganda, The Medicines Transparency Alliance (MeTA), December 2008.

almost 9% of total household expenditures in 2006. Nearly 50% of total household expenditure for health goes to medicines followed by hospital/clinic charges at about 30%.¹⁸

The need for additional health sector resources is indisputable. Uganda needs to continue to explore ways to mobilize funding for health and health commodities, but it is also important to improve the efficiency of its health spending to maximize the health benefits to its population. Uganda could reap significant savings by improving management of human resources for health, strengthening procurement and logistics management for medicines and medical supplies, and reducing waste. A recent World Bank study¹⁹ found that considerable resources are lost through waste in the pharmaceutical sector through direct drug leakages (theft), poor procurement, supply management that leads to expiration, and poor prescription practices.

2.4 Pharmaceutical Sector

2.4.1 National Pharmaceutical Sector Strategic Plan

The aim of the national medicines policy is to ensure that medicines and supplies are *safe, effective, and of good quality and that they are available and accessible at all times, affordable, and used appropriately*.²⁰ To best ensure the policy objective, Uganda has adopted the essential drugs concept, whereby a limited number of medicines have been selected and classified as essential. Limiting the number of essential medicines to be used in the public sector compared to the much larger number of medicines registered in the country and available in the private sector simplifies medicines management and use.

At the start of financial year (FY) 2009/10, the Pharmacy Division embarked on the review of the implementation of the National Pharmaceutical Sector Strategic Plan 2002/03 to 2006/07 (NPSSP I) as a step towards the development of NPSSP II (2009/10 to 2013/14). The review coincided with the development of a 10-year National Health Policy and the third HSSP that will be in effect from 2010/11 to 2014/15. The development of NPSSP II has been an iterative process that has involved discussions with stakeholders and fine-tuning of objectives and activities.

The SURE program lifespan and mandate dovetails perfectly with the NPSSP II, and hence the program has worked very closely with the Pharmacy Division to align its activities with MoH strategies. At the same time, SURE implementation structures will link to the Pharmacy Division, so that in addition to sharing ownership, existing structures are strengthened in sustainable ways. The broad areas of collaboration will include—

- Promoting, supporting, and sustaining interventions that ensure efficient medicines and health supply logistics management
- Ensuring patients have access to affordable medicines at all times
- Promoting, supporting, and sustaining interventions that ensure rational prescribing, dispensing, use, and patient safety and medication safety
- Ensuring adequate and appropriate human resources for pharmaceutical service delivery

¹⁸ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

¹⁹ Ibid.

²⁰ MoH (Ministry of Health, Uganda). Uganda National Drug Policy. Uganda October 2002

- Ensuring adequate financing of essential medicines and health supplies in the national budget and gradually moving toward reliance on sustainable funding
- Strengthening the National Drug Authority to ensure safety, efficacy, and quality of medicines and health supplies
- Ensuring that pharmaceutical policies are based on robust evidence

2.4.2 Pharmaceutical supply system entities

The MoH's Pharmacy Division and the NDA are the two main regulatory bodies in the area of pharmaceuticals. The Pharmacy Division mobilizes resources, budgets, sets policies, coordinates services, and monitors performance. The Pharmacy Division developed the NPSSP II to guide implementation of the National Drug Policy. NDA is responsible for ensuring the quality, efficacy, and effectiveness of medicines and supplies in both public and private sectors from production through storage to sales.

A group of organizations including the National Medicine Stores, a semi-autonomous not-for-profit store; the Joint Medical Stores, a private autonomous not-for-profit organization established by the Uganda Protestant Medical Bureau and the Uganda Catholic Medical Bureau; and smaller procurement agencies, such as Medicines Access Uganda Limited (MAUL)²¹ and Uganda Health Marketing Group (UHMG)²² are responsible for procurement, storage, and distribution of EMHS to public, faith-based, and some private health facilities. The NMS/JMS inventory includes more than 2,000 products: pharmaceuticals, medical and surgical supplies, equipment, instruments, and laboratory supplies. According to the Public Procurement and Disposal of Public Assets Authority (PPDA) guidelines, NMS must base all procurement on competitive tendering, which does not apply to the other medicines procurement agencies such as JMS and UHMG.²³ NMS distributes directly to hospitals and to the district level for other facilities. At JMS, customers collect the products themselves, or they can organize private-sector transport at a cost. Other service providers have other distribution systems in place. A key issue across all the service providers is weak distribution management and oversight.

The draft HSSP III reports that 71% of the Ugandan population lives within 5 km of a health facility. There is a wide network of public, private not-for-profit, and private for-profit outlets where the population can access medicines. The inventory of health facilities includes 57 public hospitals (2 national referral, 11 regional, and 44 district), 42 private not-for-profit hospitals, and 4 private sector hospitals. The country has 600 faith-based health facilities and 100 other NGO health facilities. Additionally, Uganda has a very large number of public and private health centers.

The number of health facilities has increased considerably in recent years, many constructed by the government. The number of private for-profit facilities has also increased, and not all of them are registered by the Ministry of Health. An estimated 8,000 private facilities exist—the majority drug shops. However, 45% of the health facilities (not including pharmacies and drug shops) are situated in the

²¹ MAUL started in 1998 under UNAIDS Drug Access Initiative as a collaboration between the GoU, pharmaceutical companies and UN agencies. MAUL negotiates prices and sells HIV/AIDS drugs to HCs.

²² UHMG is a company limited whose mission is to improve the quality of life of Ugandans through the provision of superior and affordable health care solutions. UHMG does this through developing and expanding markets for health products and increasing consumer access to affordable products and services

²³ Established in 2003, the Public Procurement and Disposal of Public Assets Authority is vested with the mandate to steer reform in public procurement. Among its principle duties is to conduct performance procurement audits of completed contracts executed by public procurement entities: line ministries, local governments, and parastatals.

Kampala district.²⁴ Many private facilities are not compliant with licensing criteria, operate without any regulation or oversight, and provide services of questionable quality.²⁵ Tawfik found for example, that 61% of the drug shops in Luwero were not officially licensed, and many were operated by unqualified staff, some offering unauthorized services (e.g., clinical case management and sales of unauthorized medicines).²⁶ Despite questionable service quality, for-profit community drug vendors provide about 75% of drugs in rural communities because they are more convenient, have more medicines available, and often offer credit.²⁷

A number of initiatives have been launched recently including the Accredited Drug Sellers, Africa Affordable Medicines, and the private wing in public hospitals. The Accredited Drug Seller initiative aims at improving quality of services in private sector drug shops. Sponsored by the Bill & Melinda Gates Foundation and implemented by MSH, the scheme has been piloted in Kibaale district in Uganda. The main objective is to increase access to quality pharmaceutical services through training of drug sellers, government accreditation, expanding the range of available medicines (with participation of NDA), and a marketing strategy that improves visibility of participating outlets. Africa Affordable Medicines' objective is to improve access to affordable pharmaceuticals through establishing a franchise of community pharmacies in all districts in Uganda. The franchise will operate through joint ventures, but will be responsible for controlling and guaranteeing availability, quality, and price of medicines. It currently operates in five districts. Both initiatives are new and their impact is yet to be evaluated.

In general, looking at all levels of care, public facilities are still the most popular source of medicines. The WHO/Health Action International study found that 46% obtain medicines from the public sector because they are free of charge; 21% got their medicines from a private health center; 10% from a private pharmacy, and 11% from a shop or market.²⁸

Uganda has 70 drug importers and distributors, 250 wholesale pharmacies, 440 retail pharmacies, 4,742 authorized drug shops, and an unknown number of illegal drug shops. The public and private sectors each account for approximately 50% of the health service delivery, although estimates suggest that the private sector may account for as much as 70% including the drug outlets.²⁹ The private sector facilities play a significant role in provision of health care and especially in the case of ACTs where 71% of outlets providing ACTs are private sector facilities.³⁰

The private for-profit sector in Uganda is expanding and the Ugandan pharmaceutical industry is able to produce generic essential medicines and now also ACTs. In 2008 Uganda reportedly had about 15 local pharmaceutical manufacturers, the most important being Quality Chemicals Ltd., Abacus Parental Drugs Ltd., Medipharm Industries Ltd., and Kampala Pharmaceutical Industries Ltd. Quality Chemicals, partly owned by the government, was established in 2007 to provide reliable ARV and ACT production. The plant has passed good manufacturing practices standards to produce tablets and capsules, but still waits to be WHO certified to produce products such as ARVs. NMS presently procures ACTs and ARVs from

²⁴ Management Sciences for Health. The East African Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

²⁵ Ssewanyana, S., N. O. Juliet, K Ibrahim, D. Lawson. Demand for Health Care Services Uganda: Implications for Poverty Reduction. Research Series No. 40. Kampala: Economic Policy Research Centre. 2004 http://www.eprc.or.ug/pdf_files/researchseries/series40.pdf.

²⁶ Tawfik et al. Negotiating improved case management of childhood illness with formal and informal private practitioners in Uganda. *Tropical Medicine and International Health* 11 no 6 pp 967–973. 2006.

²⁷ World Bank. Improving Health Outcomes for the Poor in Uganda Current status and implications for health sector development. Africa Region Human Development Working Paper Series. Human Development Sector Africa Region The World Bank. 2005.

²⁸ MoH. (Ministry of Health, Uganda). Uganda Pharmaceutical Sector Baseline Survey. Kampala: Health Action International and World Health Organization. 2002.

²⁹ Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010.

³⁰ Ibid.

Quality Chemicals outside of PPDA procedures.³¹ Abacus Parental Drugs also has a newly established focus on parental production (infusions and injectables), and Medipharm Industries (E.A.) Ltd., is the largest national producer of oral rehydration salts. Kampala Pharmaceutical Industries Ltd. produces many generic essential medicines.³²

Several donors have been supporting the pharmaceutical sector. The Danish International Development Agency (Danida) has, for the last decade, supported NMS, the Pharmacy Division, capacity building at district and facility level, sector reform, and funding of EMHS. Other donors such as USAID, U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the Clinton Health Access Initiative (CHAI), United Nations Children's Fund (UNICEF), WHO, United Nations Population Fund, Global Alliance for Vaccine and Immunization (GAVI), World Bank, the Global Fund for AIDS, Tuberculosis and Malaria, and several bilateral donors have provided substantial input to the sector through procurement of medicines and supplies or through pharmaceutical sector support programs such as Supply Chain Management Systems (SCMS), DELIVER and Strengthening Pharmaceutical Systems programs. DELIVER has been phased out, and Danida is ending its support to the pharmaceutical sector in line with the SURE program taking the lead role in the sector.

2.4.3 Emerging trends in the pharmaceutical sector

Since the early 1990s, Uganda's pharmaceutical sector has been one of the most studied, with policies, laws and regulations, supply systems, and supply management tools implemented based on numerous professional recommendations. At the policy level, assessments led to enactment of the National Medical Stores Act (1993), the National Drugs Policy and Authority Act (1993), the Public Procurement and Disposal of Public Assets Act (2003), the elevation of the pharmacy section to a division within the Ministry of Health, and the change from the credit line system introduced in 2002 to Vote 116 in 2009/10. At supply systems level, the Central Medical Stores was elevated to an autonomous NMS, while JMS became a major supplier to the private not-for-profit sector.

In the 2000s, vertical supply systems increased as a result of increased resources from global initiatives with varying reporting requirements. This created a complex mix of pharmaceutical supply subsystems. In addition, manual systems have shifted to a highly computerized warehousing management information system (e.g., Navision to Navision Attain to MACS/SAGE), procurement and inventory management systems (Pipeline, Supply Chain Manager, and others).

In the last decade, Uganda's public sector supply chain management has focused on better coping with an increasing number of products, programs, and patients. Medical stores and managers at all levels are tasked to manage a larger number and volume of products, but with limited additional resources to expand their capacity to manage, store, and distribute these products. Moreover, due to the high cost of these commodities and the need for reliability in supply, much pressure is put on performance and the establishment of the necessary internal capacity to manage. Managers are asked to improve performance with better forecasting, storage management, recordkeeping, and coordination between the many new procurement and funding sources. Some of these skills can be handled by the public sector through capacity building and systems development, but some countries with similar issues have recognized that these functions could potentially be outsourced to private sector logistics providers who

³¹ James Taylor et al. The push for local production, cost and benefits – A case study of Uganda Quality Chemicals. Africa Fighting Malaria Policy Paper. September 2009.

³² Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010.

have more specialized capacity and systems in place to handle more complex supply chains.³³ However, the costs and benefits of outsourcing are sometimes unclear and there is no fits-all solution. Outsourcing can simplify the government's tasks, but managing outsourcing can be a huge challenge.

Outsourcing procurement, storage, and distribution to the private sector in Uganda has started through partners such as MAUL, UHMG, and JMS, while NMS continues to expand its own capacity for self-reliance for various reasons including political agendas, jobs, and independence. However, as the private sector in Uganda continues to strengthen technology and information management, it increases the chances that the private sector can excel in certain supply chain functions and surpass what is possible within the public sector. Rather than trying to keep pace with these advances, it may make sense for NMS and the government systems to outsource specific functions, when it is a viable option, and place more focus on other core operational functions.

Policy changes have attempted to improve operational efficiencies such as the shift from a push to a pull distribution system that puts ordering responsibility on facilities, the change from the essential medicines credit line (decentralization of funds) to the Vote 116 (centralization of funds), and the abolition of user fees to a mixture of user fees and no user fees at facility level. However these initiatives cannot ensure medicines availability without a significant increase in funding. The evolution of the supply chain system over the last 25 years shows that technical solutions should be linked to the policy, political context, and resources available. Implementation of recommendations should be viewed in respect to a holistic approach to systems change.

2.4.4 Challenges in the pharmaceutical supply system

Recognizing the important role medicines and supplies play in providing health care, supporting the sector and addressing some of the many challenges that exist are important.

Some of the key challenges already documented include—

- **Medicines availability:** Persistently poor availability, even for lifesaving medicines such as those for treating malaria, diarrhea, and infections. On average, monthly stock-outs at health facilities for six tracer medicines has decreased from 20% in 2006/07 to 31% in 2008/09.³⁴ NMS is facing serious problems in assuring availability using available funds, and some studies found that NMS was only able to supply 50 to 60% of their mandate.³⁵
- **Funding:** Present government spending on EMHS (not including ARVs, ACTs and TB medicines) is roughly estimated at less than USD 1 per capita per year, which is only about half of what WHO estimated is needed for EMHS. Moreover, funding for ARVs is also insufficient, only about half of people in need of AIDS treatment receive it.
- **Donor dependency:** Of the drugs required, only about 30%³⁶ are provided for within the government budget. Uganda depends highly on the global community—particularly Global Fund, GAVI, and USAID/PEPFAR. With high donor dependency comes unpredictability of release of funds, which makes it difficult to plan and predict stock status and requirements.

³³ Emerging Trends in Supply Chain Management. Outsourcing Public Health Logistics in Developing Countries, USAID DELIVER Project, 2010.

³⁴ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009.

³⁵ Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010.

³⁶ Ibid.

- **Diversity in logistics capacity and competencies:** Stock and storage management performance varies greatly, but in general, supply chain management capacity is poor. In 2009, the discrepancy between actual stock on hand and that recorded was about 30%, with poorest performance at the lowest level facilities.³⁷
- **Procurement at NMS:** A performance review of procurement processes at NMS found that 22 out of 36 procurements were classified as high risk by the PPDA.
- **Distribution:** Distribution at NMS is not monitored in terms of its efficiency, and critical distribution management information is not available to make improve the distribution system.³⁸ Districts handle their own distribution, but often have insufficient capacity resulting in too long lead times and stock outs.
- **Ordering:** Facility orders are often only partly filled by NMS. Moreover, orders reportedly include items not ordered. Facilities use different order forms and the reorder quantities differ by commodities. Facilities do not manage orders and receipts, nor do they have standard operating procedures (SOPs) available.
- **Human resources:** Most districts have to manage pharmaceuticals without trained pharmacists or pharmacist technicians. Only 45% of district level staff has any logistics training.³⁹
- **Reporting rates:** Much effort has been made to ensure accurate and timely reporting. The DELIVER project introduced a good system that combined order and reporting forms for ARVs. However, reporting rates and accuracy continue to be a challenge, with TB reporting rates measured as low as 60% by the Supply Chain Manager software used to track the reporting in 2010.
- **Performance monitoring:** Supply chain performance monitoring in health facilities, NMS, and JMS is weak. Few financial performance indicators are monitored, and performance is not monitored regularly apart from the one availability indicator in the HMIS monitoring system—stock out of six tracer medicines. Poor availability of reliable information weakens decision making.
- **Coordination with private sector:** Procurement is often not well coordinated among private sector entities, procurement agencies, and the public sector. Weak quantification, forecasting, and demand management results in overlaps of efforts and parallel supply chains and without an overview of available stock, crises with stock out or even over stocking lead to a waste of limited resources.⁴⁰
- **Waste:** Medicines worth USD 2.4 million expired between 2005 to 2007, of which 82% were donor products.⁴¹ Expiry of medicines continues to be a problem at all levels due to poor management and weak quantification of national needs. The public system is perceived to suffer from leakage at all levels, and public sector drugs, such as ACTs are sold on the private market.

Uganda's pharmaceutical sector challenges are many. Addressing the problems cannot be done in isolation, but require a holistic approach and interlinkage among sector entities.

³⁷ Reev Consultant International. Final Report Essential Medicines and health Supplies Tracking Study. October 2009.

³⁸ Andrew Hayman. Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

³⁹ Kimera, D. Assessing Bottlenecks in the reproductive health commodities supply chain, Consultancy Report for UNFPA-Uganda, February. 2008.

⁴⁰ Ministry of Health Task Force on National Medical Store, Draft report 2008.

⁴¹ Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements, Andrew Hayman, 2007.

2.5 USAID's SURE program

USAID has established and is funding the SURE program to support the Government of Uganda and the Ministry of Health's commitment to improve access to essential medicines and health supplies, which is an important part of the HSSP II. The SURE program, with funding of USD 38 million, will run from 2009 to 2014. It is being implemented by MSH and its core partners, the Euro Health Group, Fuel Group/Pharmaceutical Healthcare Distributors, and Makerere University. SURE builds on what has already been achieved in other programs, notably USAID's SCMS, DELIVER, and Strengthening Pharmaceutical Systems programs and the long-term contributions of Danida. SURE targets 45 districts and has established 5 field offices.

The program's specific goal is to ensure that Uganda's population has access to adequate quantities of good quality essential medicines and health supplies and that the information flow at all levels is adequate. To this end the program will address seven basic elements in the supply chain—

- **Funding:** Taking into account the serious constraints on funding, SURE will help build financial management capacity at all levels, including district and facility levels, increase management and planning of financial resources through the establishment of a financial tracking system, and identify new ways to ensure that medicines are affordable through competitive and appropriate procurement. SURE will also work to make the supply chain more efficient and reduce waste.
- **Quantification of needs:** SURE will support the Pharmacy Division and MoH programs to better quantify national needs, and increase the capacity and sustainability of conducting quantifications that ensure reliable needs assessments.
- **Procurement:** The program will promote the development and application of efficient drug procurement practices for the public and non-profit sectors. SURE will support NMS in strengthening procurement practices and improving procurement planning.
- **Storage:** SURE will examine storage facilities and routines, including the use of software systems for warehousing (MACS) and finance (SAGE). SURE will strengthen facility level storage management.
- **Distribution:** The way drugs and supplies are distributed throughout Uganda will be critically examined with attention to reliability, cost, and effectiveness, and necessary alternatives will be considered.
- **Districts and facilities:** SURE will support the development of supply chain management capacity at these levels, with particular attention to standards of supervision, accreditation, performance, and the introduction of supply chain management information systems.
- **Pharmaceutical information systems:** The program will use new technologies to develop a new pharmaceutical information system aimed at strengthening and supporting pharmaceutical management at central, regional, and district levels by public sector, private not-for-profit, and implementing partners. The information system will include finance, commodity, health management information system, and performance information.

To strengthen the pharmaceutical supply system, SURE will apply a performance assessment–problem identification/prioritization–intervention approach implemented by district and health sub-district supply chain supervisors. The approach is based on “on the job training” linking capacity building and behavioral changes by recognizing and rewarding each performance milestone that facilities and supervisors reach. This reward or “carrot scheme” will not only improve motivation of health workers and supervisors, but also ensure that interventions are implemented systematically.

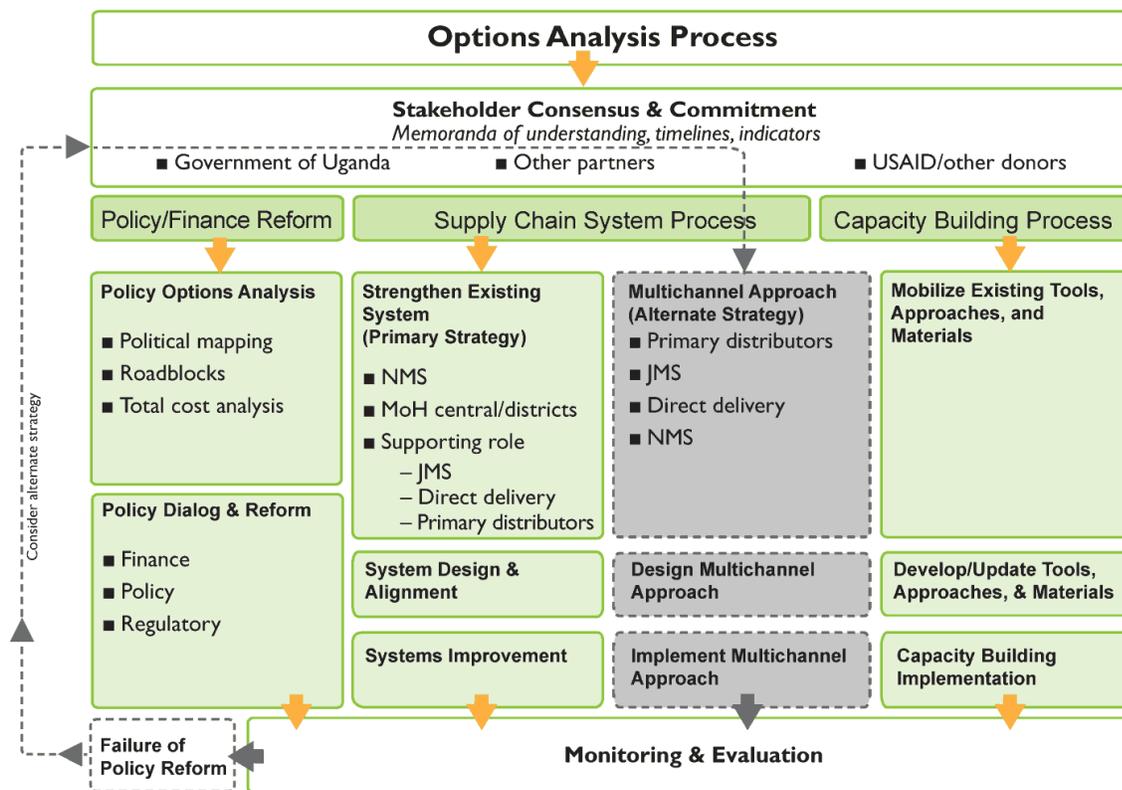
An important element in all these seven areas is the policy options analysis described in the following sections. The POA will guide the program to identify and choose appropriate new strategies and solutions for achieving the SURE objectives.

3. METHODOLOGY

3.1 Policy option analysis overview

As highlighted in the previous section, Uganda has, like other countries in the region, struggled to have a well functioning supply chain that ensures availability of EMHS. The SURE strategy is designed to improve the supply chain performance from the top of the health system to the bottom, working in three areas to produce longer-term stability and sustainability of the EMHS supply chain: 1) policy and finance reform, 2) supply chain systems, and 3) capacity building. The strategy is outlined in below Figure 1.

Figure 1: SURE Technical approach and the policy option analysis



The figure illustrates that an initial and major component of SURE is a policy option analysis, which combines total cost analysis methods with indicator-based performance measurement in the pharmaceutical sector.

Management Sciences for Health (MSH) has successfully used systematic policy option analysis in 13 countries, resulting in well-planned reforms in supply chain policies and performance. This type of analysis examines both the merits and deficiencies of current practices at various levels of the supply chain (funding, quantification, procurement, storage, and distribution), which are then set against alternative structures and practices that could be introduced.

Recognizing that there are no easy solutions and that road blocks will exist for new and innovative strategies, it will be important that critical regulations and policies affecting issues such as NMS

governance, procurement, and financing/cash flow can be reformed. In addition, the government must meet financial commitments and commit to finding sustainable long-term solutions within the public sector.

The POA identifies new policy and financial reforms to improve the supply chain, as well as road blocks to implementing these new reforms. If these road blocks cannot be removed and jeopardize the proposed interventions, the POA also identifies alternative strategies to make EMHS more available, assessable, and affordable. The new policy and financial reform will focus on strengthening performance and viability of the NMS and increasing government financial commitment. However, if NMS is not able to meet expectations or MoH cannot agree to a standardized and unified system, alternative strategies will need to look at incorporating the services of other procurement organizations in the not-for-profit or the for-profit sector or use a combination of all three. Ensuring sufficient financing of EMHS is the most critical variable for ensuring availability. Should the government and donors not be able to ensure sufficient funding, the POA must look at alternative strategies for funding. Such strategies will most likely involve increased user or patient payments.

An agreement to implement the decided reforms will be part of the government's and other stakeholders' commitment, and the agreement will be detailed in memorandums of understanding between NMS and SURE and MoH and SURE. The memorandums will be linked to approved work plans and clearly defined milestones and timelines.

The POA in Uganda began in the fourth quarter of 2009. By April 2010, extensive data had been accessed and analyzed. A conference to present the findings to a broad audience to consider proposals for action was held in Kampala on April 15–16, 2010. This report covers its proceedings and findings, culminating in the formulation of concrete proposals that will form the basis for a detailed implementation plan which contains MoH, NMS, NDA and other stakeholders commitments.

3.2 Methodology of the SURE policy options analysis

A group of international and national consultants together with the SURE team implemented the POA. The process involved reviewing information from previous studies, legal and technical documents, policies and guidelines related to the supply chain and NMS, stakeholder interviews, and field visits.

Specifically, the following the POA comprised the following techniques—

- Review of documents and reports from prior consulting engagements, previous pharmaceutical programs, assessments undertaken by MoH, WHO, USAID programs, Danida, and other donors and organizations.
- Review of existing policies and regulations including the PPDA regulation.
- In-depth interviews with staff from MoH Pharmacy Division, MoH programs, NMS, JMS, USAID, U.S. Centers for Disease Control and Prevention (CDC), Danida, and other key donors in the pharmaceutical sector, MoH accounts, Ministry of Finance, private sector distributors, procurement agencies, and implementing partners.
- Visits to NMS, JMS, and other procurement and storage agencies involved in the public sector supply chain to review and assess procedures, tendering processes, ordering, storage and distribution practices, and financial viability.

- Survey of product pricing and assessment of district level supply chain management, district orders including assessment of vital-essential-necessary (VEN) and essential drug list items, expenditure and cost analyses, third-party distribution costs, and other supply chain performance indicators.
- Hospital visits to obtain information on availability, stock-out levels, budget allocations, expenditure prioritization by product category, inventory management, information on availability of tracer medicines, and private wings. The hospitals surveyed were selected from six districts in two different regions based on proximity to minimize the period of time needed to gather the information.

SURE shared and discussed the preliminary findings with key stakeholders, MoH–Pharmacy Division, NMS, JMS, and USAID at meeting organized with each individual stakeholder. Professor Graham Dukes of Euro Health Group was contracted to guide the process and chair the conference.



4. SITUATIONAL ANALYSIS AND OPTIONS

The following sections: supply chain and flows, pharmaceutical finance, availability, accessibility, and pricing, NMS financial and business performance, NMS procurement, NMS storage and operational efficiency, and distribution each have an introduction that provides background, leading into the situation analysis and an outline of various options proposed and agreed to at the conference.

4.1 Supply chain and flows

4.1.1 *Types of supply chain models*

Medicines and health supplies procurement and distribution systems range from being fully public to fully private. Although there are many variations, pharmaceutical supply systems can be characterized in five main models: central medical stores, autonomous supply agency, direct delivery, primary distributor, and fully private retail outlet system. However, systems commonly combine elements from multiple models. Table 1 below summarizes key characteristics of each model and their advantages and limitations.

The central medical stores model is the most common one found in developing country public supply systems. A general central stores model is outlined in Figure 2. In it, a unit within the ministry of health or central medical store purchases and distributes medicines and health supplies. This system requires that the central medical stores manage human resources, infrastructure, equipment, and communications systems for selection, procurement, storage, and distribution of supplies. Central medical stores frequently experience problems with financial management, product needs estimation and forecasting, tender management, warehouse management, and transportation and security of supplies. These problems may be caused by many factors including political or administrative interference in the medical stores operations; inadequate capacity to resolve fundamental management problems, particularly related to discipline; low productivity or corruption; insufficient financial resources; constraints in tendering and contracting due to the payment cycle and erratic disbursement of ministry of health funds, including foreign currency, by the ministry of finance; and transportation difficulties, particularly with vehicle maintenance.

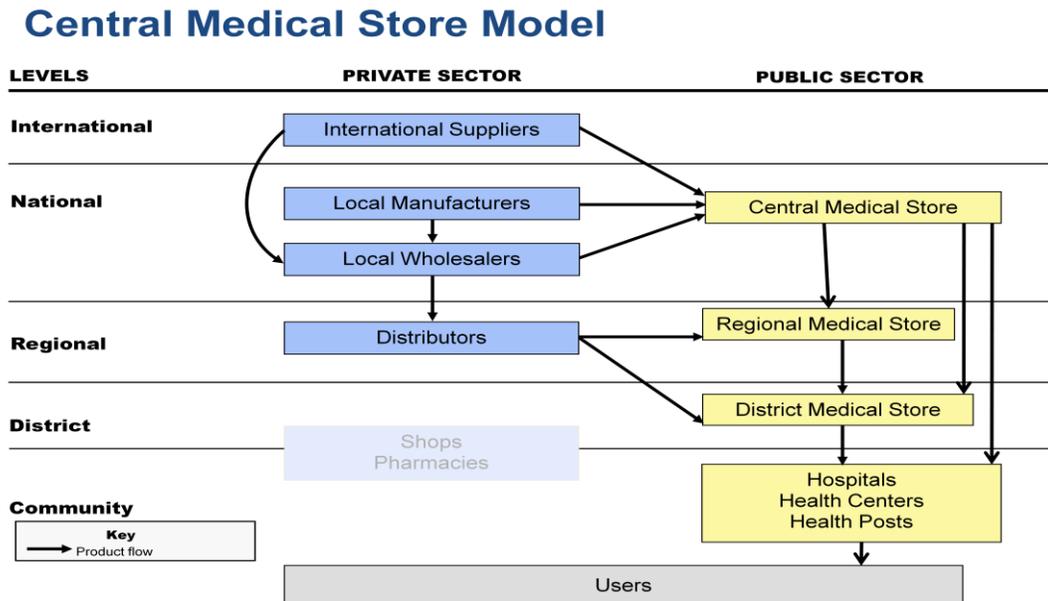
Operational problems with central medical stores have led some governments to establish independent supply agencies under private management. The independent supply agency is a centralized system, not-for-profit in nature, managed by an autonomous or semi-autonomous board of directors. Supply operations are managed like a private company, with a view to maximizing resource utilization and efficiency. The National Medical Stores in Uganda was established to reflect this approach. NMS shares the principles illustrated in the Figure 2, although NMS does not maintain regional stores, and the role of the district warehouses is limited only to storing TB medicines, along with other none EMHS. Moreover the district store also functions as a transit hub for EHMS supplies to the facilities.

Table 1: Key characteristics of medicines and health supplies procurement and distribution system models

Supply System Model ⁴²	Central Medical Store	Independent Supply Agency	Direct Delivery	Primary Distributor	Retail Outlet
Key management characteristics	Public management of all operations in contracting, receiving, storage, and distribution	Private management (not for profit) of all contracting, receiving, storage, and distribution operations	Management of supplier contracts, including delivery services	Management of supplier contracts and the distributor service contract	Management of out-of-pocket contracts; Financing mechanism / reimbursement of expenditures
Storage infrastructure (central, regional, local)	Maintains storage facilities (own and/or outsourced)	Maintains storage facilities (own and/or outsourced)	Direct delivery by suppliers to regional or district warehouses or health facilities	Storage and distribution services ensured by a logistics company	Is not required
Transportation of products	Own and/or outsourced	Own and/or outsourced	Suppliers ship product	Contracted logistics company	Is not required
Responsibility for quality assurance of medicines and supplies	Central Medical Stores	Independent supply agency	Procurement unit of the Ministry of Health	Shared by the procurement unit of the Ministry of Health and the primary distributor	National Medicines Regulatory Authority
Management information system	Own system and data captured from the supply network	Own system and data captured from the supplies network	Own system with information provided by suppliers	Own system with indicators supplied by logistics company	Own system to process invoices and payments on private purchases
Advantages	Control maintained by the Ministry of Health over the entire purchasing and distribution system	Maintains advantages of the centralized system, with greater flexibility and efficiency in key management areas such as personnel management. Autonomy in financial management promotes sustainability in revolving fund mechanisms for procurement and supply of medicines.	Eliminates direct costs of storage and distribution. Decentralization of control in preparing product estimates and orders facilitates delivery and facilitates adjustments in product forecasts. Maintains benefits of lower prices achieved through centralized tendering. Reduces inventory management costs as smaller stocks need to be managed at the institutional level.	Maintains advantages of a direct delivery system. Improved competition in services and costs between potential primary distributors.	Less demanding and less costly for the Ministry of Health.
Disadvantages	High capital costs for warehousing and office installations, storage, and transportation. High recurrent costs with personnel, transportation, and other operational costs. Limited incentives for efficiency. Prone to political and other types of interference.	Cost and effort in establishing a supply agency. Less prone to interference. May retain some of the limitations of the central medical stores model. Limited competition impacting efficiency (if it acts as a monopoly).	Challenges in coordination and supervision of shipments, payments, and product quality. Only feasible when an adequate private sector infrastructure exists. Suppliers are limited to those capable of ensuring local distribution (may reduce competition and increase cost). Direct delivery by multiple suppliers is inefficient and can increase costs.	Challenges in supervision of services and product quality. Competition depends on a well developed private distribution system.	Does not guarantee equitable access to the poor and marginalized population groups.

⁴² Adapted from Figure 6.2, Comparison of supply systems for Government and Institutional Health Services. In: Management Sciences for Health, in collaboration with the World Health Organization. Managing Drug Supply: The Selection, Procurement, Distribution, and Use of Pharmaceuticals. 2nd edition, revised and expanded. West Hartford, Connecticut: Kumarian Press, 1997, p. 72.

Figure 2: The central medical stores model

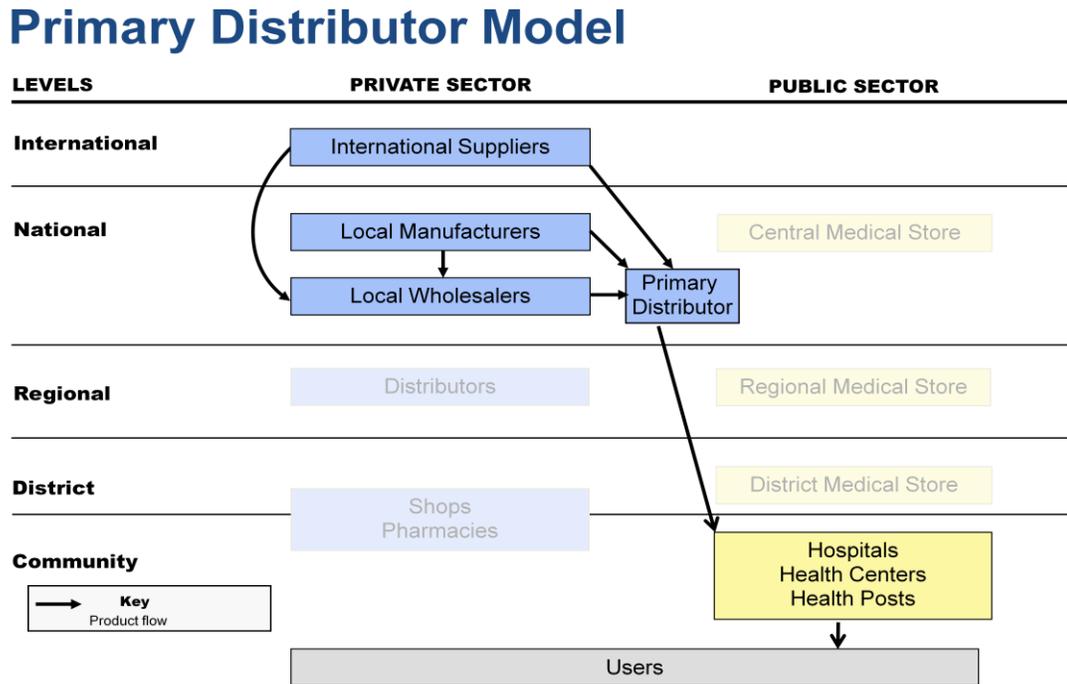


Other supply system models eliminate the need to operate and maintain a network of public warehouses. For example, the direct delivery model is mainly a decentralized system in which supplies are delivered directly to the health care facility by the supplier. The ministry of health's procurement unit manages the tender process centrally to select suppliers. Products on the essential medicines list may be purchased either centrally or by decentralized institutions and delivered to the health facilities without going through a central or an intermediate government warehouse.

In the primary distributor model, the ministry of health procurement unit contracts with a single primary distributor as well as with suppliers for medicines and medical supplies, usually through separate tenders (Figure 3). Contracted suppliers deliver to the primary distributor, who receives, stores, and distributes medicines and supplies to health care facilities.

The private retail outlet model is based on dispensing prescribed medicines from outlets that may be located within public facilities or as a separate entity within the community. In this system, the responsibility for managing the supply of medicines and supplies has been completely transferred to the private sector. Pharmacies obtain their supplies through their own procurement mechanisms. Public programs may pay pharmacies or reimburse patients for the cost of dispensed medicines and supplies.

Figure 3: The primary distribution model



4.1.2 Complexity of the Uganda EMHS system

In Uganda several issues need further scrutiny to ensure best solutions and efficiency in the supply chain systems. Descriptions of some of these follow—

- **Push/pull distribution:** Following thorough analysis, Uganda abolished its push (kit) system in 2002,⁴³ and following capacity-building in supplies management at facility level, introduced a pull (order-based) system. However, NMS and the MoH decided to re-introduce the kit system in 2010 for lower-level health facilities to increase product availability that resulted from low quantification and supply management skills.
- **Centralized vs. decentralized operations:** As part of the health sector reform, many tasks and responsibilities were decentralized to district level including medicines funding through the primary health care vote and district distribution. However, the primary health care vote was recently centralized into Vote 116, while distribution is still decentralized. Storage is partly centralized and partly decentralized. An analysis of procurement, storage, and distribution needs to assess the degree of decentralization that ensures optimal resource utilization.
- **Level of autonomy:** The autonomy of NMS has varied considerably. The POA needs to look at the options when looking at NMS viability and long-term sustainability
- **Public, private, and nongovernmental organization roles:** Uganda has had to increase the workload to manage the scale-up of treatment programs. To best cope with this new demand on the supply chain, the responsibilities and roles of NMS, JMS, UHMG, MAUL, and other providers should be revisited to make best use the available and existing capacity of each of the providers.

⁴³ Euro Health Group. Study to Advise on the Change from an Essential Drugs Kit Supply System to an Order-based Supply System. PUSH – PULL study. Danida-Supported Uganda Health Sector Support Programme. November 2001.

- **Mix of in-house and contract services:** The need for NMS to outsource services needs to be analyzed, building on outsourcing experiences from other countries.

In Uganda, the supply chain system for essential medicines and health supplies is composed of a multiplicity of independent, mostly parallel sub-systems that has made it so complex that it is difficult to map. This situation has developed over time and stems from the public delivery system's inability to efficiently satisfy target-driven ministry and donor-funded activities. In addition, supply chain policies have gone back and forth. For example, the policy for EMHS distribution in the last 20 years started with an emergency program funded by Danida that operated as a push system parallel to the distribution of other medicines and health supplies from the then Central Medical Stores. This distribution system was later integrated into the national supply system, where facilities pulled supplies in early 2002,⁴⁴ and was later supplemented by a push system for mainly donor-funded high-value commodities. In 2010, another shift replaced the pull system with a push system for the HCII and HCIII facilities, citing the facilities' inability to order supplies.

Uganda's ARV supply chain also illustrates how multiple systems evolved and contributed to overall complexity. At the start of the antiretroviral therapy program in June 2004, a parallel supply chain for ARVs was established in response to inefficiencies and problems in the existing EHMS supply chain. Delivery schedules were not followed and deliveries of drugs to health centers were perpetually delayed. Then and now, there is no established system of drug delivery from district stores to health centers. Some districts have vehicles to deliver drugs to health centers, whereas, in other cases, health centers have to find ways to collect their drugs from the district. The time it takes for drugs to move from district stores to the health sub-district and eventually to health centers ranges from two weeks to over a month. ARVs required a reliable system because of the pressing need to increase ART access, so a parallel system was established. This led to a highly verticalized supply chain system starting from forecasting, quantification, and procurement to inventory management at lower-level facilities (Figure 4).

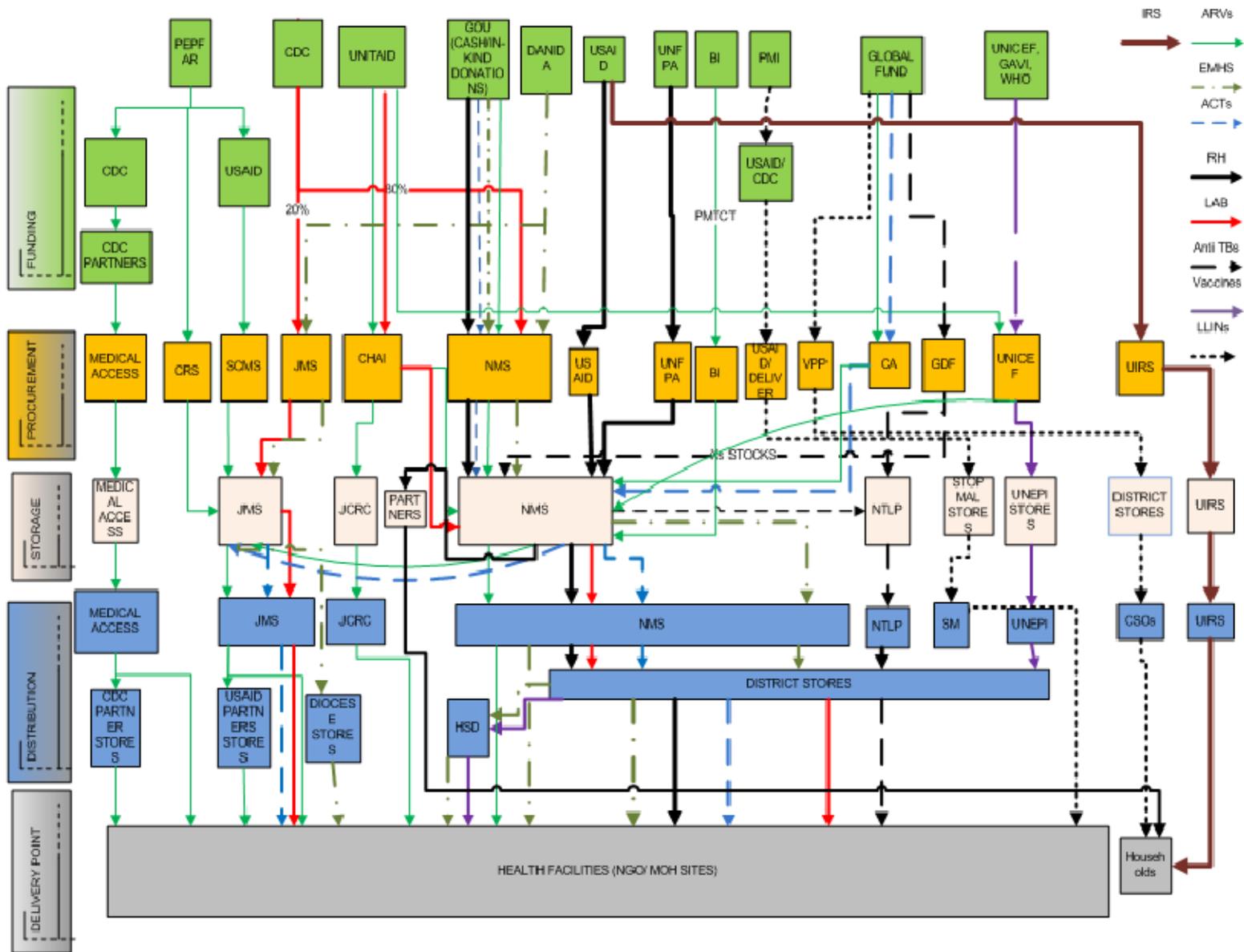
The existing policy and institutional framework⁴⁵ for pharmaceutical management lends itself to potential overlaps and duplicity and potentially provides an environment that allows mismanagement, corruption, and pilferage. The Office of the Auditor General's value for money audit (March 2009) found difficulties in reconciling drugs between the Ministry of Health, districts, and health centers. The audit reported *weaknesses in procurement planning* (e.g., some procurements not approved by the contracts committee and irregularities in the procurement of ARVs); *anomalies in drug storage and distribution* (e.g., items delivered were not taken off ledger charge, and doubtful delivery of drugs to some health centers, such as in Soroti district); *drug shortages and stock outs, inadequate storage facilities, and expired drugs.*⁴⁶

⁴⁴ Euro Health Group. Study to Advise on the Change from an Essential Drugs Kit Supply System to an Order-based Supply System. PUSH – PULL study. Danida-Supported Uganda Health Sector Support Programme. November 2001.

⁴⁵ Drugs management has a broad net work of interdependent institutional entities such as the Ministry of Health, the National Medical Stores, the National Drug Authority, the Ministry of Finance, Planning and Economic Development, local governments, existing policies, laws and regulations including PPDA, private sector organizations, donor organizations, third party programs (such as the Global Fund and PEPFAR), and NGOs.

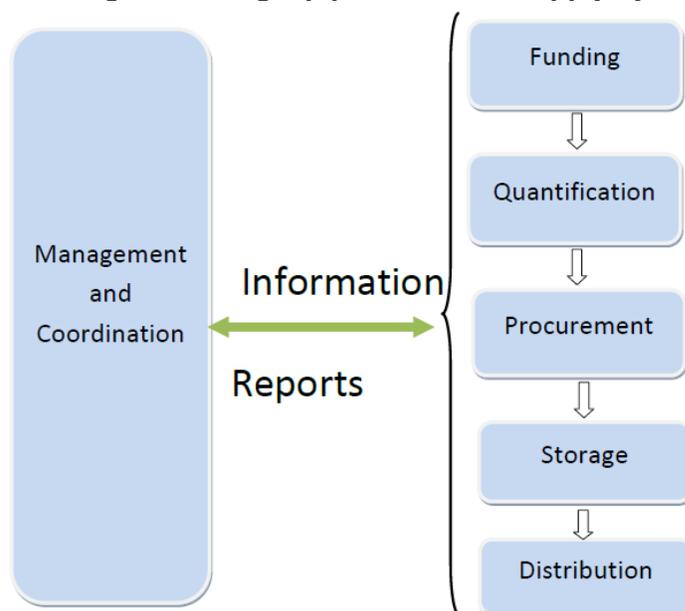
⁴⁶ Andy O'Connell. DFID. Building a Joint Response to corruption in Uganda, Focus on Drug Management. Draft for initial discussion. Core script 31 March 2010.

Figure 4: The system and flows for EMHS in Uganda



For any supply chain system to work efficiently, a strong link must exist between forecasting, quantification, procurement, warehousing, inventory management, and the logistics management information system. The system should be as lean as possible and with maximum coordination as depicted in Figure 5 below.

Figure 5: Single pipeline EMHS supply system



As detailed in Table 2 (below), Uganda has 23 sources of funding for all medical supplies, 23 procurement agents, 16 warehousing entities at national level, and an equivalent number of distributors in the health sector, the majority of these as part of the ARV supply chain.

Table 2: Number of key stakeholders by commodity type

Commodity area	Funding	Procurement	Storage (excludes at district level)	Distribution (excludes at district level)
EMHS	3	2	2	1
ARVs	6	8	4	7
ACTs	2	2	2	1
Reproductive health	3	3	1	1
Laboratory	2	3	2	3
TB	1	1	1	1
Vaccines	3	1	1	1
Long-lasting insecticide treated nets	2	2	2	several
Indoor residual spraying	1	1	1	1
Total	23	23	16	16

These duplications are created because national programs need to manage specific diseases and conditions, such as HIV/AIDS, TB, and others; different programs are using the same products, but from different sources or financed by different donors; and programs are under pressure for results, such as scaling up access to new treatment to meet donor targets. In addition, parallel systems proliferate because some donors' policies limit the amount of funds available to procure through government agencies, and some do not trust government's capacity to handle their commodities.

As seen in other countries in the region, multiple systems create problems.⁴⁷ They affect the government's ability to use resources effectively and efficiently, thus increasing the cost of supporting the supply system. Human, financial, and other resources are wasted, and system support personnel are overworked. Multiple systems challenges coordination between district and central authorities, capacity building of local counterparts is often ineffective, and continuity of activities is at risk when parallel systems disappear and are replaced instead of strengthening existing systems. The overall result is the creation of fragmented information management and recordkeeping, duplicate inventory and storage systems at health facilities, and multiple reporting systems that can lead to over and under reporting and inaccurate and untimely information.

The need to meet the demand of supply efficiency and reporting requirements for different partners also results in the development of different tools and SOPs at all levels: TB, reproductive health, HIV/AIDS, and malaria are the key disease areas that have different SOPs and reporting tools and cycles. This meant that a health worker at a facility has to fill in four different sets of documents in the same period. Because information is fragmented and irregular, projections are unrealistic, which complicates planning and increases the risk of stock-outs and expiration. In turn, access to advantageous prices for high volumes of medicines is lost.

4.1.3 Options to strengthen supply chain and flow

Strengthen supply chain management

Surveys and studies have pointed toward weak supply chain management in all aspects of selection, quantification, procurement, storage, distribution, information management, and facility management as one of the major cause of EMHS not being available at all levels^{48,49}. Statistics in these studies indicates that health facilities could not carry out reliable EMHS forecasting, and only 35% were using the HMIS ordering guidelines because of the multiplicity of tools and various supply systems. Therefore, the harmonization of needs forecasting through the formation of a quantification and procurement planning group that will also improve multi-stakeholder coordination will go a long way to ensure EMHS availability. Findings also indicated that only 12% of the facilities were able to use some form of electronic tool, yet exploiting cheap technologies that exist in Uganda would probably improve the efficiency of ordering, recordkeeping, and reporting. Ordering is a problem, with 77% of facilities carrying out some form of emergency ordering, which indicates a lack of supply planning, poor recordkeeping, and unreliable distribution from the key supply agencies.

The SURE program plans to strengthen information management starting with existing manual processes. The need to harmonize SOPs, reporting tools, and ordering cycles, cannot be over

⁴⁷ Lippeveld T. 2007. Introduction: Scaling Up Key Public Health Interventions. JSI, Best Practices in Scaling Up Series. Online at <http://www.jsi.com/Managed/Docs/Publications/ScalingUpSeries/lmis.pdf>.

⁴⁸ MOH (Ministry of Health, Uganda). The 3-year rolling procurement plan for essential medicines and health supplies. Including road map for harmonization, integration and alignment (FY 2006/07-2008/09), July, Ministry of Health, Government of Uganda, 2007.

⁴⁹ Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010.

emphasized. Benefits would include reduced workload for the health worker, consistent data transmitted through the reporting system, and elimination of duplication because the store keeper would have uniform ordering cycles. Moreover, space would be used better at a health facility because similar items could be stored together without differentiating the various programs. Needless to say, facilities would then be in a better position to estimate their needs given the availability of harmonized data.

Along with harmonization and streamlining efforts SURE will help build capacity in supply planning, stock management, and quantification skills at all levels. This POA also discusses the need to harmonize and make distribution more efficient to substantially improve the whole pharmaceutical management system. The following sections present a more detailed analysis of each of these processes.

Centralize quantification and procurement planning

In Uganda, various implementing partners carry out forecasting and quantification, depending on the category of commodities, and the methodology is not standardized at national level. For HIV/AIDS commodities, the MoH's AIDS Control Program forecasts and quantifies with support from SURE and other donors. While PEPFAR funds ARVs mainly through the CDC and USAID, the respective implementing partners do the forecasts and quantification with support from SCMS. TB and leprosy product quantification is carried out by that program, with technical assistance from the SURE program and Stop TB Partnership. MoH's malaria program quantifies malaria drugs with support from the President's Malaria Initiative (PMI) through the SURE program. Vaccines are quantified by the United Nations Expanded Program on Immunization with support from WHO and GAVI, while the NMS quantifies EMHS in collaboration with the Pharmacy Division. Contraceptives are quantified through a consultative process managed by the Reproductive Health Commodity Security Committee with support from SURE.

Due to the verticalization of the quantification process, it is difficult to plan for the required resources to perform the national quantification exercise that the Pharmacy Division leads. The process involves collecting data from the various partners that support programs without quantification data. Over the last 10 years, national quantification exercises have only been done in 2002 and 2008. The outcome of the second quantification exercise helped in the revision and automation of the three-year rolling procurement plan. Procurement planning is another highly verticalized activity as shown in Figure 1, dependant on funding agencies and uncoordinated. The different funding agencies use different procurement agents with different procurement procedures as follows—

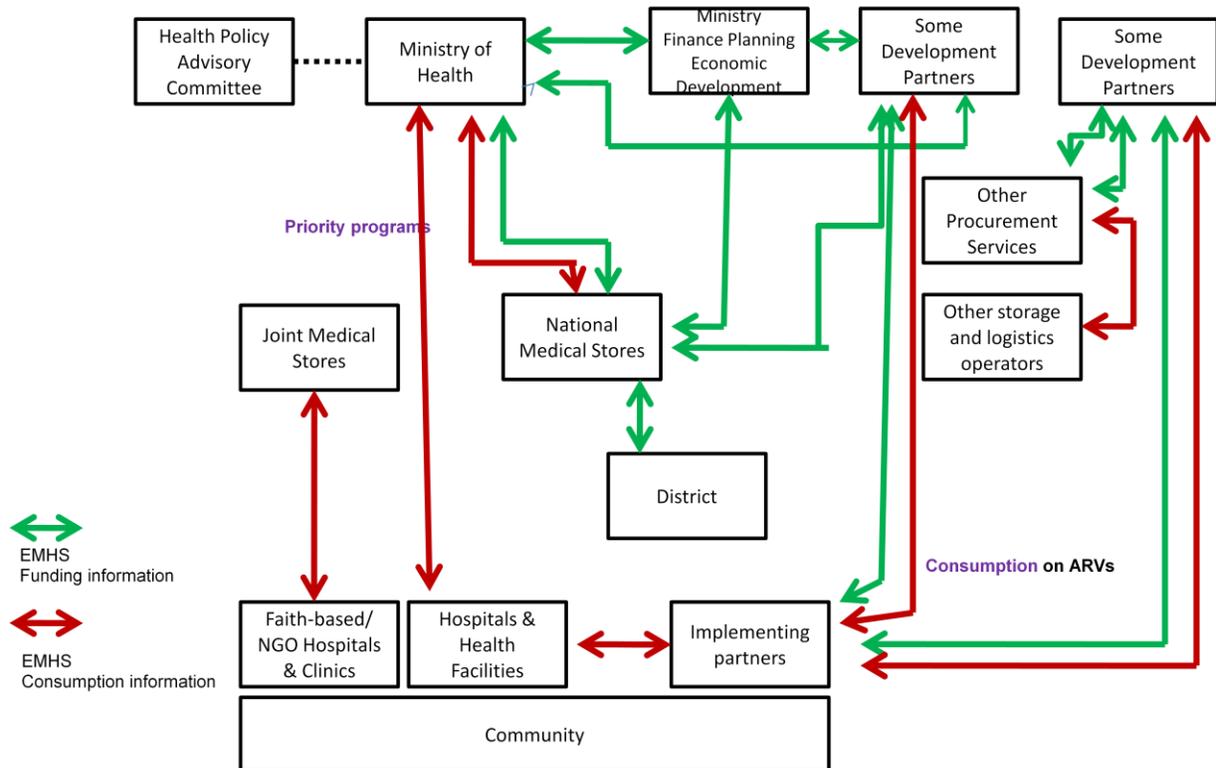
- PEPFAR funding agencies procure through SCMS for USAID and through Medical Access Uganda Limited for CDC.
- The AIDS Control Program procures through NMS using government allocated funds, while carrying out Global Fund procurements through Crown Agents.
- Boehringer Ingelheim procures and supplies Uganda with donated HIV test kits and nevirapine for children.
- Pediatric formulations donated by UNITAID are procured by CHAI.
- DELIVER procures malaria prevention commodities, while Catholic Relief Services procures malaria commodities centrally in the United States.⁵⁰

⁵⁰ Catholic Relief Services consolidates its procurement for all countries where it supports the AIDSRELIEF program from its central office in the United States and then asks the supplier to ship to the respective countries. It has different hubs for the various regions where Catholic Relief Services is present.

- Voluntary pooled procurement program established for bed nets procurement.
- UNICEF procures vaccines for WHO and GAVI in addition to procuring commodities for UNICEF-supported activities in Uganda and the Uganda Indoor Residual Spraying project.
- TB and leprosy commodities are procured by the Global Drug Facility, which is not dependant on the source of funding.
- NMS procures EMHS for the government and Danida.
- CDC uses NMS as a procurement agent for laboratory reagents and supplies for the laboratory credit line items.
- Contraceptives are procured by USAID, United Nations Population Fund, and NMS (for government of Uganda allocated funds).
- Currently there is an essential equipment credit line that is jointly funded through a SWAp mechanism by the United Nations Population Fund, Danida, and the government of Uganda.

The above scenario limits Uganda from accessing advantageous prices for ordering high volumes of medicines in addition to the costs to open several tenders for the same medicine. Figure 6 shows the current information and funding flows, which lack a coordination mechanism.

Figure 6: Current EMHS funding and consumption information flow



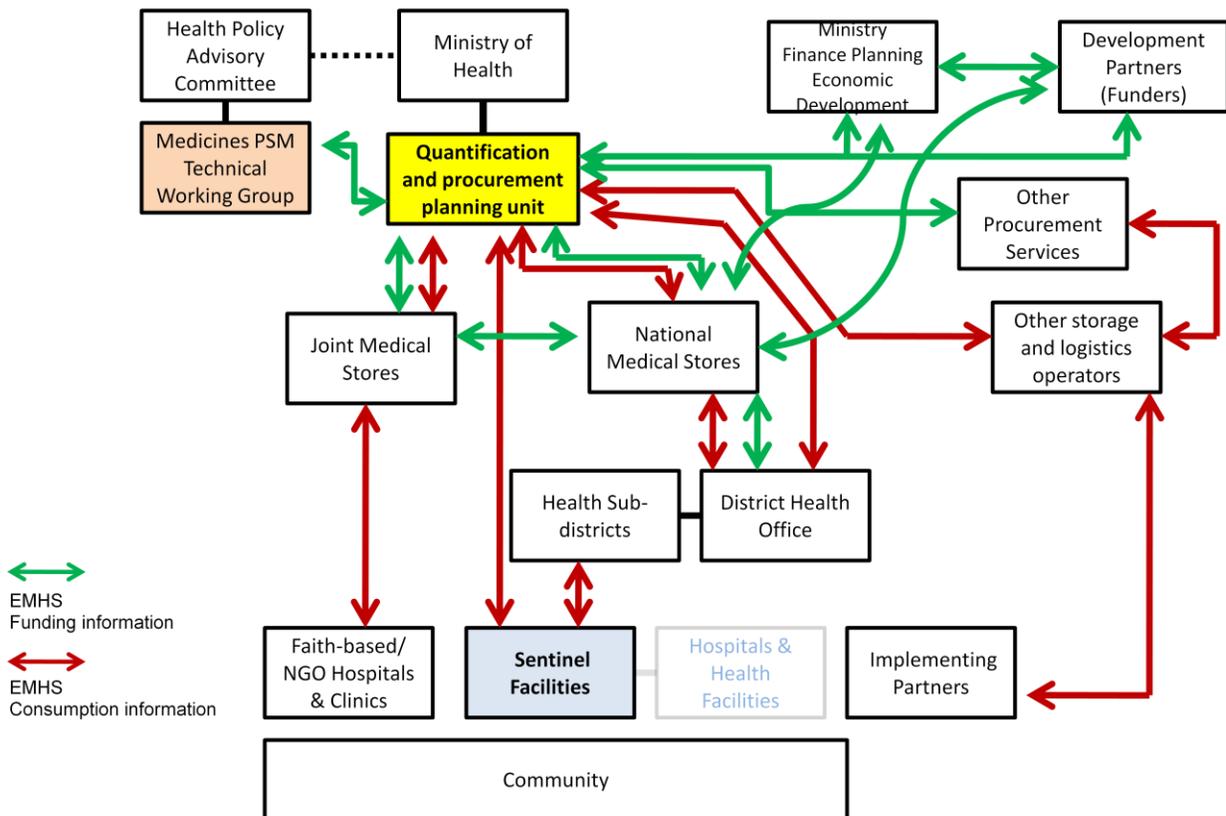
One of the key POA recommendations is to centralize the quantification and procurement planning activities within the Ministry of Health so that—

- Leadership for coordination is owned by a local institution or individual

- Coordination needs are clearly identified and articulated
- Stakeholders agree with purpose of coordination
- Stakeholders participate in defining the coordinating mechanism
- A clear distinction exists between technical and political coordination
- Coordinating mechanisms are based on existing structures and responsibilities for sustainable change

The formation of a centralized quantification and procurement planning unit would ensure a centralized hub for procurement planning and EMHS consumption and financial information. Figure 7 shows the location of the proposed quantification and procurement planning unit in relation to other stakeholders. The unit's objective would be to build an efficient infrastructure by leveraging logistics, synchronizing supply with demand, and measuring performance for efficiency gains. The unit could also play a role in standardizing methods for quantification and in building quantification capacity at central level.

Figure 7: Proposed EMHS funding and consumption information flow



The pharmaceutical options analysis suggests that the formation of the unit will produce the following benefits—

- Donor commitment, which helps with tracking of products and medicines funding flows
- Identification of EMHS funding gaps

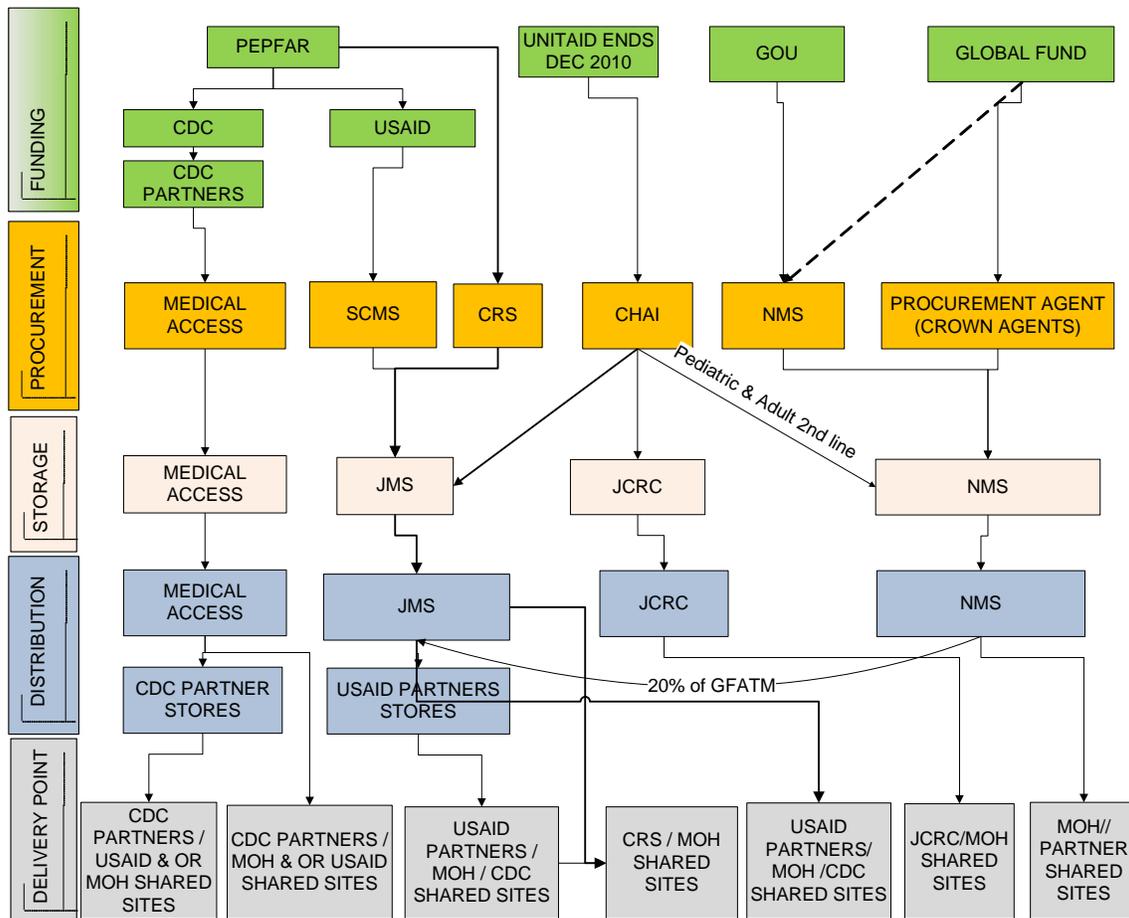
- More efficient reprioritization of needs and coordination with funding agencies
- Easier supply scheduling and space planning by warehousing agencies
- More efficient linkages to the rolling procurement plan and the pharmaceutical management information system

The stakeholders therefore recommended the establishment of a national-level Quantification and Procurement Planning Unit situated within the Ministry of Health, specifically, in the Pharmacy Division. The unit will help programs carry out quantification and procurement planning, which will feed into the three-year rolling procurement plan. The Pharmacy Division will play a major coordination role. Despite the difficulty in achieving a single supply chain in Uganda at the moment, integrating and harmonizing the quantification and procurement planning activities into one coordinated unit will be an initial step toward achieving efficiency.

Coordinate donor supply systems—harmonization and streamlining

An examination of how medicines and related commodities are provided in Uganda provides the overall impression of immense complexity, involving multiple supply systems. Figure 8 illustrates a single example of how ARVs are handled.

Figure 8: ARV supply chain system



The system includes four funding sources (PEPFAR, UNITAID/CHAI, Government of Uganda, and Global Fund), five procurement agents (MAUL, SCMS, UNITAID, CHAI, NMS, and Crown Agents), and multiple storage and distribution entities. Similar overviews of essential medicines and health supplies, prevention of mother-to-child transmission (PMTCT) commodities, malaria medicines, TB medicines, reproductive health commodities, and HIV laboratory supplies were developed as part of the analysis. Together, there are eight separate systems and 25 sub-systems. It is understandable that a major donor partner would want to work through a familiar system to avoid loss or mismanagement, but there are serious drawbacks of multiple supply systems as previously described.

By contrast, an *efficient* one-string system, if it can be achieved, will help eliminate these problems, facilitate monitoring, and result in much better use of resources. However, an *inefficient* one-string system may be more harmful than the status quo. With Uganda's complex situation, an entirely uniform one-string system cannot be achieved rapidly, but every well-planned step in that direction will reduce wastage and increase efficiency. The conference participants highly recommended taking steps to simplify and harmonize the supply chain for all commodities, while giving highest priority to the ARV supply system which seems most problematic.

Change supply chain structure

The question is whether it would be appropriate in the Ugandan setting to select an option that either requires a greater level of operational and management sophistication and skill that may be risky or simply keep expanding warehousing capacity, which may not be sufficient for future needs. The more prudent solution may be one that increases throughput and stock turn without investing in new or additional warehousing capacity, but instead allows the organization to be more productive with its existing infrastructure and provides built-in flexibility to expand or contract as need arises. This requires changes to inventory policy, a different relationship with suppliers, and new supply chain partners to act as consolidation points for bulk stock.

The key to this strategy would be partnering with a professional supply chain company to provide a reserve stock-holding facility. International suppliers would ship first into this facility, which could be based in Uganda or another strategic location in East Africa. This facility would hold stock and ship to the Ugandan distribution center regularly and would be close enough to allow for a flexible and rapid response. The strategy could also include some direct delivery to customers. This kind of system would reduce the volume received at any one time by the Ugandan operations and smooth the movement of goods into their operations and through to customers. Combined with a rationalized inventory and procurement policy, such an arrangement offers the potential for substantial increases in capacity without significant capital investment. In such a system, the focus of the Ugandan operation would be on procurement, receiving and processing customer orders, and distribution.

The benefits of such an arrangement for the Ugandan operations would include—

- Reduced lead time for supply into the Ugandan store decreased to no more than 2 to 3 weeks, which would permit the Ugandan warehouses to reduce their stock to no more than 4 to 6 weeks of coverage, less than half of the current planned level at the store. This would free space at the Uganda operation and permit a reorganization of picking, packing, and dispatch operations to enable more efficiency
- Buffer stock held closer to the final customer with reduced lead times for the Ugandan operation

- Increased flexibility to better manage variances between forecasted and actual demand (e.g., regimen changes, poor visibility of demand, less than perfect procurement coordination, emergency situations)
- Increased flexibility to better manage supplier performance problems (e.g., manufacturing lead times and reliability, long supply chains with multiple countries of origin)
- Improved control over operations and service
- Opportunity for focusing on customer service
- Improved management of product quality and expiry
- No need for capital investment in new warehousing and materials handling equipment

In addition, this system would address some of the problems that NMS has reported themselves, such as freight delays through Mombasa port and long international supply lines, which are important reasons why NMS stock-holding has increased in recent years.

Partnering with an experienced pharmaceutical supply chain company would also ensure adherence to international warehousing and distribution standards and transparency in terms of stock status and inventory control. Supply chain security would be guaranteed. The economies of scale at such an operation, which would likely be providing similar services for other customers, both commercial and non-commercial, suggests a sustainable, cost-effective service. Although it would require a cost-benefit analysis, if the overall costs promised to be less with this kind of solution than with making investments in new warehousing and materials handling, then the plan would deserve serious consideration.

Depending on the arrangement made, further cost efficiencies could result from consolidating consignments from suppliers concentrated in one country, especially India, for shipping. This arrangement would also increase security and quality assurance by ensuring chain of custody from manufacturer through to final delivery into Uganda. This kind of arrangement might be valuable for MAUL, for example, whose business centers on ARVs.

4.2 Pharmaceutical finance

This section starts by describing Uganda's different financing mechanisms including on-budget financing through the medium-term expenditure framework (MTEF), off-budget financing, user fees, and laboratory funds. After describing where the money comes from, the section explains the financing systems used to purchase EMHS, such as conditional PHC non-wage recurrent grants, Essential Medicines Account (EMA), and EMHS funding flow prior to financial year 2009/10. Following is an evaluation of the Primary Health Care (PHC) grant and EMA systems and an assessment of resource allocation by level of care. Also included is a description of the new Vote 116 financing mechanism and its implications. The analysis sub-section looks at funding over the years by its sources and by product categories. Finally, the existing funding gap is quantified and reviewed within the context of the broader macroeconomic framework.

4.2.1 Financing Mechanisms

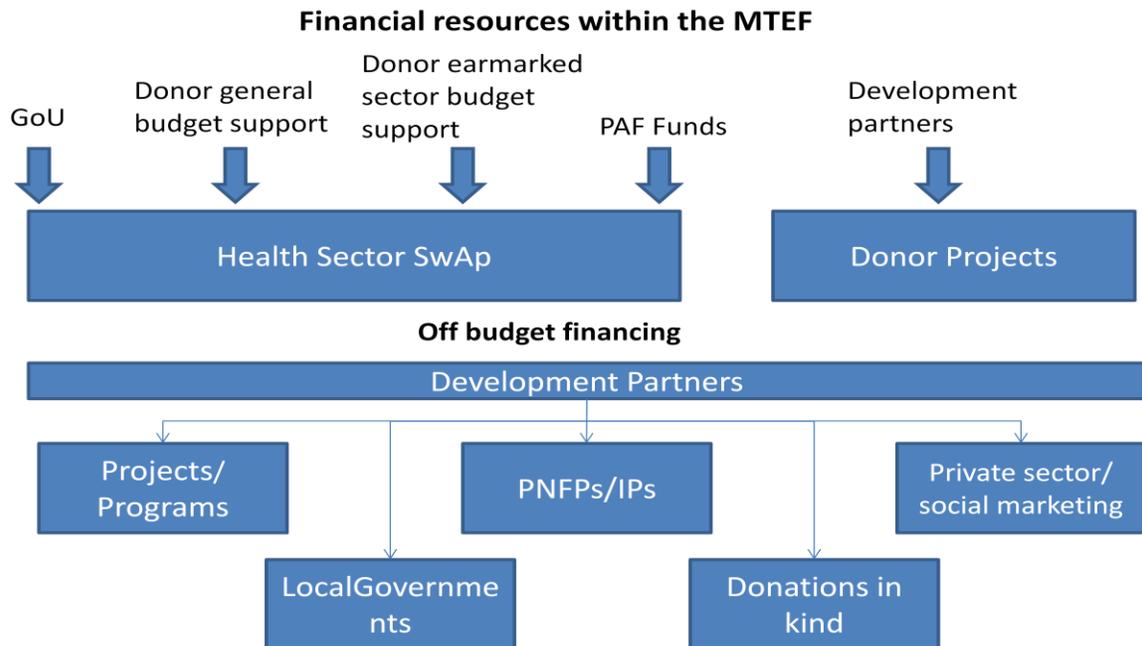
Uganda adopted a SWAp in August 2000 following the signing of a memorandum of understanding with development partners and multilateral donors. The MoH viewed the health sector SWAp as the most

efficient mechanism for mobilizing and allocating resources to deliver the Uganda National Minimum Health Care Package in line with the Health Sector Strategic Plan.⁵¹

Financing within the medium-term expenditure framework

Budget support within the rolling three-year medium-term expenditure framework aims to ensure funding predictability, coordination between funders, and allocation of resources to match sector priorities, while maintaining macroeconomic stability (Figure 9). In FY 2008/09, government funding to the health sector was UGX 375.38 billion, of which UGX 23.4 billion was specific donor budget support to the health sector. Other donor support within the MTEF included funding through the poverty action fund mechanism, general budget support, and projects, which totaled UGX 253.08 billion. Overall, donor funding contributed to 44%⁵² of the health sector budget within the SWAp mechanism.⁵³ The increasing importance of the poverty action fund mechanism in financing primary health care is worth noting. In 2006/07, total poverty action fund releases to the sector amounted to UGX 198.87 billion, representing 85% of the government health sector budget.⁵⁴ This figure has increased to UGX 265.39 billion in FY 2009/10, of which UGX 75.7 billion has been appropriated to the National Medical Stores Vote 116.⁵⁵ The amount covers 70% of the entire government financing for the financial year for EMHS including ARVs and ACTs.

Figure 9: Financial flows from MTEF and off-budget financing



⁵¹ MoH (Ministry of Health, Uganda). Health Sector Strategic Plan 2006/07-2009/10. Vol. II. Kampala: MoH. 2005.
⁵² Total donor support=23.4+253.08 divided by (total funding from all sources=375.38+253.08) as a % is 44%.
⁵³ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009.
⁵⁴ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report FY 2006 /07. October 2007
⁵⁵ Ministry of Finance Planning and Economic Development. MOPPED. Approved Budget Estimates 2009/10.

Off-budget financing

Table 3 below illustrates one of the major challenges posed by this financing mechanism. Only 26% of donor project expenditure is channeled through the public sector.⁵⁶ Although donor project and program contributions are an off-budget expenditure, they represent significant financial flows into the health sector; however, there is currently no reliable mechanism to accurately report and track these resource flows. Even within the MTEF, there is differing data on donor contributions (Table 3), and in many instances, actual and planned expenditure data are not available or are not incorporated into the budget framework process. Availability of data on composition of funding, alignment of resource allocation with sector priorities, timing of resource flows, as well as coordination with other funding sources remains a challenge.⁵⁷

An additional challenge is the increasing importance of financing from global health initiatives such as PEPFAR, PMI, the Global Fund, CHAI, and GAVI in delivering health interventions that cannot be funded from local resources. These resource flows are not captured in the national per capita health expenditure calculations and EMHS financing data.

Table 3: Trends in government and donor financing of the health sector (UGX billions)

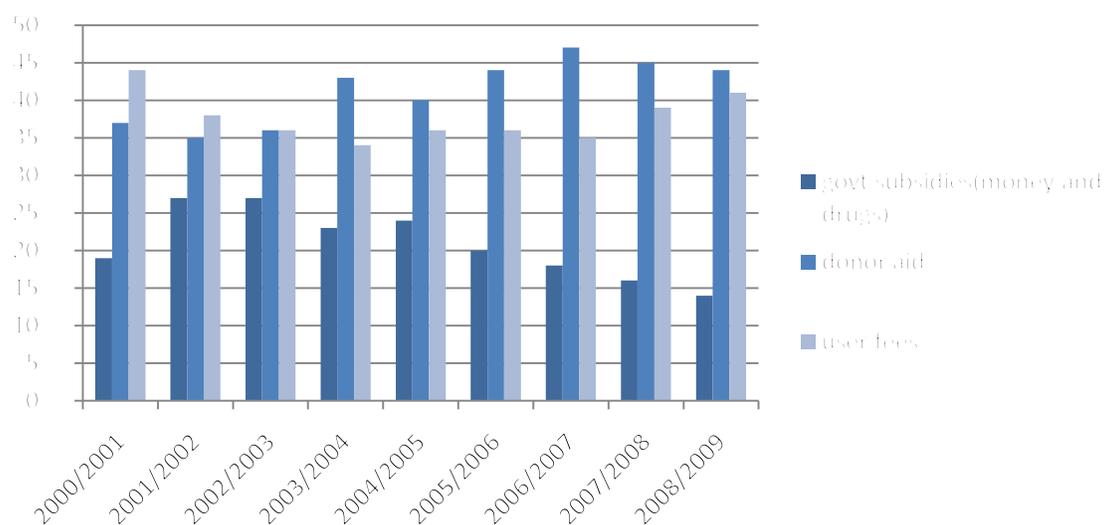
Financial year	Government of Uganda funding	Donor contribution MoFPED data	Total MoFPED data	% donor funding in total health expenditure (MTEF).	Donor contribution MoH data
2000/01	124.2	114.8	239.0	48	203.8
2001/02	169.8	144.1	313.9	46	NO DATA
2002/03	196.0	142.0	337.9	42	NO DATA
2003/04	207.8	175.3	383.1	46	153.3
2004/05	219.6	146.7	365.5	40	254.9
2005/06	229.9	268.4	498.2	54	507.3
2006/07	242.6	139.2	381.9	36	NO DATA
2007/08	277.4	141.1	418.5	35	133.2
2008/09	375.4	253.1	628.5	40	NO DATA
2009/10 projections	507.1	507.6	1,014.7	50	NO DATA

User fees

Although the government abolished user fees in all public facilities in March 2001, private wings within public hospitals are allowed to charge patients for inpatient/outpatient services, medicines, and supplies. Little data is available on the volume of resources mobilized from user fees in government facilities. Within the private not-for-profit sub-sector, however, data on resources and the contribution of user fees to total income is well documented and reliable (Figure 10). These figures provide a clear insight into the emerging importance of user fees as a financing mechanism in the health sector.

⁵⁶ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report FY 2006 /07. October 2007

⁵⁷ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2007/08, October 2008.

Figure 10: Sources of income in private not-for-profit hospitals

SOURCE: MOH ANNUAL HEALTH SECTOR REPORT, 2008/09

In 2008/09 user fees in private not-for-profit hospitals contributed to 41% of total income, while at lower level private not-for-profit facilities the contribution was 58%. The data indicates that on average, the user fee contribution to total income is 10% higher in lower level units during the 2000/01 to 2008/09 period.

The data indicate that resources mobilized from user fees in the private not-for-profit sector were equivalent to the total government expenditure on EMHS in both government and private not-for-profit sectors but excluding expenditure on ACTs, ARVs, and vaccines in 2008/09 (Table 4).

Table 4: Total resources mobilized in the private not-for-profit sector (UGX billions)

	2005/06	2006/07	2007/08	2008/09
Total income	89.6	90.0	102.0	113.0
User fee contribution to total income	32.2	31.5	39.8	46.3
Government of Uganda EMHS expenditure	Incomplete data	31.1	49.0	49.6

SOURCE: MOH ANNUAL HEALTH SECTOR PERFORMANCE REPORTS, 2004/05–2008/09

Laboratory funds

CDC provided USD 1 million each year for five years (2009/10 to 2014/15); the commitment is currently estimated at USD 9 million per year. In FY 2008/09, PEPFAR through CDC contributed 78.26% of the laboratory financing, UNICEF contributed 12.17%, and CHAI contributed 9.56%. In FY 2009/10, CDC contributed 47.0% of the finances, Global Fund contributed 44.2%, and UNITAID contributed 9.8%. Eighty percent of the funding is allocated to public facilities and the remaining 20% to private not-for-profit facilities—managed by NMS and JMS, respectively.

Public facilities are allocated credit line funds per cycle or on a bimonthly basis. Information on the availability of these funds is made known to the facilities through the health sub-districts. JMS allocates

funds to respective NGO/private facilities every four months. Information on the availability of these funds is made known to the facilities through the health bureaus in the respective districts. NGO facilities have the flexibility to order supplies at any time within the given four-month period that supplies are availed.

However, by April 2010, only about UGX 7.4 billion of the UGX 25 billion allocated to NMS for the laboratory credit line had been consumed. This is approximately 29% of the total allocation, which is very low.

4.2.2. Financing systems and their performance

In principle, public health facilities procure EMHS through the NMS using a credit line, while private not-for-profit and NGO facilities and public sector private wings procure through JMS or other private providers based on cash and carry. Private not-for-profit facilities, however, also received supplies free of charge through JMS (i.e., laboratory supplies and medicines procured through Global Fund such as ARVs, ACTs and anti-TB drugs). Beginning in FY 2009/10, NMS/ MoH integrated the PHC non-wage recurrent grants formerly managed at district level and the EMA credit line into one, Vote 116, managed by NMS. PHC non-wage grants were reportedly underutilized or used for purposes other than procurement of EMHS. The change has ensured payment going directly from the Government of Uganda's Ministry of Finance Planning and Economic Development (MoFPED) to suppliers, instead of through the districts or Ministry of Health and NMS receiving handling fees only. In 2009/10, not all commodity votes followed this mechanism, some (i.e., vote for reproductive health commodities, vaccines and condoms) are still financed through the MoH.

Primary Health Care credit lines and grants

The government's fiscal decentralization strategy's major objectives were to promote local government autonomy and widen participation in decision making, while enhancing the effectiveness of resource allocation in line with local priorities. According to this strategy, the treasury released PHC non-wage grants to district general accounts on a quarterly basis. Subsequent releases are subject to local governments submitting accountability and work plans in accordance with accounting guidelines. According to these guidelines, local governments can reallocate up to 10% of the grants to other underfunded sectors. General hospitals were required to use a minimum of 40% of the PHC recurrent non-wage grant on EMHS, while for lower level units, the requirement was 50% for EMHS.

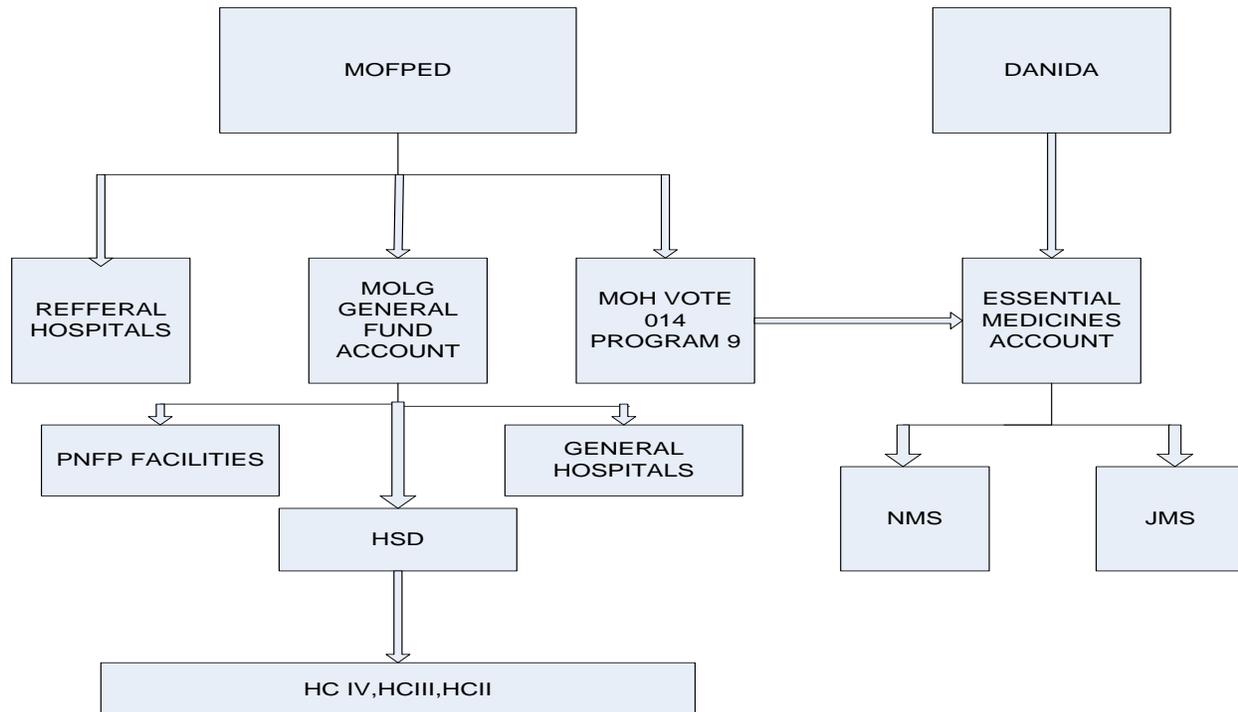
Funds flowed from the district general fund account to the health sub-district health account where lower level health units could access them to procure EMHS. The local governments operated a district general fund account where money was remitted by the central government. Twenty percent of the overall PHC grants were earmarked for private not-for-profit facilities and were channeled through the same system. For general hospitals, funds were specifically earmarked at the MoFPED level and transferred from the district general fund account to the hospital accounts. Regional and national referral hospitals had specific treasury votes tagged to vote outputs, and PHC grants were transferred to the respective vote accounts in the Bank of Uganda on quarterly basis. The overall principle was that health facilities were required to spend all PHC funds earmarked for EMHS procurement at the NMS or JMS. These two institutions charged the facilities a sales price that included product cost and a mark-up to cover operating costs.

Essential Medicines Account credit line

Prior to the Vote 116, the EMA credit line operated as a basket-funding mechanism jointly funded by the government under program 9 of the MoH budget Vote 014 and Danida. Funds were deposited into a specific ring-fenced account (EMA) operated by the MoH; 20% of the funding was earmarked for private-not-for-profit facilities to be accessed through JMS, while 80% was for government facilities to be accessed through NMS. The MoH allocated resources to regional referral and general hospitals as well as to health facilities up to health sub-district level. The health sub-districts were responsible for final reallocation to health facilities using a 3:2:1 ratio.

The MoH established an elaborate system of checks and balances governed by a memorandum of understanding. NMS and JMS were required to submit pro-forma invoices for each cycle (three cycles per year). Based on prices set for the cycle, facility credits were uploaded, and local purchase orders issued by the MOH. Health facilities could access EMHS from NMS or JMS up to the limit of the uploaded credit. The MoH would pay NMS and JMS upon proof of delivery of EMHS to health facilities based on a pre-agreed format. Figure 11 illustrates the flow of funds.

Figure 11: Flow of funds for the national minimum health care package



Performance of PHC grants and the EMA credit line

Budgetary allocations of PHC funds and actual treasury releases have consistently diverged. In 2007/08, 12.4% of allocations were not released from the treasury.⁵⁸ Use of PHC funds to procure EMHS varies at different levels of the health system, but in general, PHC funds to some extent have been reallocated to other sectors or used for other activities. In addition, there is under-spending and non-adherence to the set guidelines on EMHS expenditure. District, regional, and referral hospital expenditure of the PHC

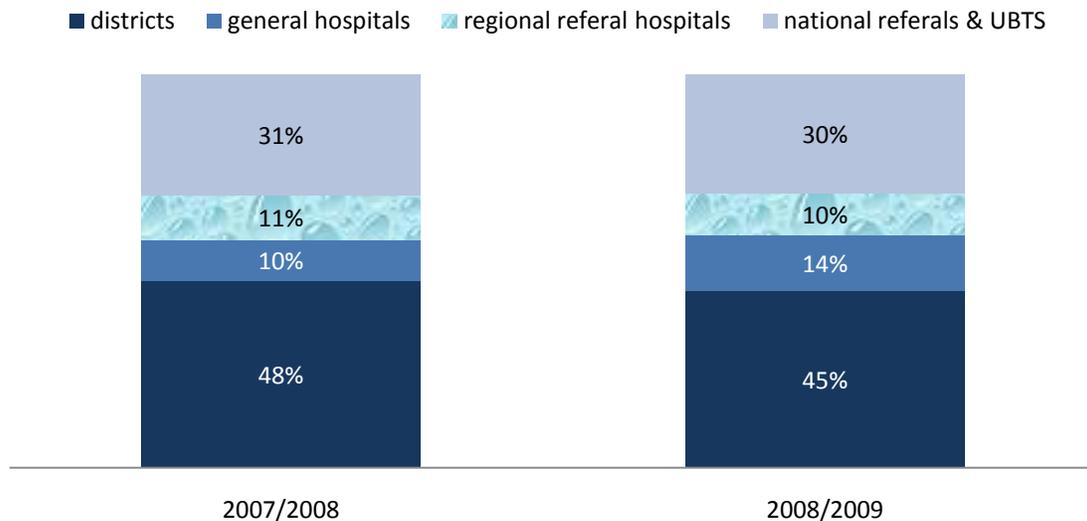
⁵⁸ Reev Consultant International. Final Report Essential Medicines and health Supplies Tracking Study. October 2009.

essential medicines budget at NMS and JMS was about 60%. The national referral hospitals (Mulago and Butabika) spent 3.8% and 7.5% respectively of their PHC essential medicines budget at JMS and almost nil at NMS in 2008/09.⁵⁹ Nonetheless, the use of the EMA credit line accounts has increased over a six-year period reaching 100% with all levels (district, regional, and general hospitals) of the health system overdrawing their 2008/09 allocations by using unused funds rolled over from the previous financial year.⁶⁰

Resource allocation by level of health care

The bulk of financing for EMHS is channeled to district governments through the essential medicines account credit line and decentralized conditional primary health care grants. In 2008/09, this accounted for 59% of the total government expenditure on EMHS excluding ARVs, ACTs, and other shared national services, including immunization covered under Program 9 of the MoH budget Figure 12 below illustrates that 60% of government expenditure on EMHS is spent at the local government level.

Figure 12: EMHS resource allocation by level of care



SOURCE: MOFPED BUDGET PERFORMANCE REPORTS, 2007/08 2008/09; MoH ANNUAL HEALTH SECTOR REPORT, 2007/08 2008/09

4.2.3 The new Vote 116 operations and implications

Starting in FY 2009/10, the government shifted the financing system for EMHS away from the decentralized PHC recurrent wage grant and the essential medicines account credit line. A new vote (Vote 116) was established for the National Medical Stores and the Mulago Hospital Complex. A vote function represents a set of services or outputs that a spending institution is responsible for delivering using treasury funds. NMS is currently the only government parastatal with a vote function. Funds under vote functions are allocated to wage, non-wage recurrent expenditure, capital development, and domestic arrears. The government created NMS as a Class II parastatal or a semi-autonomous not-for-

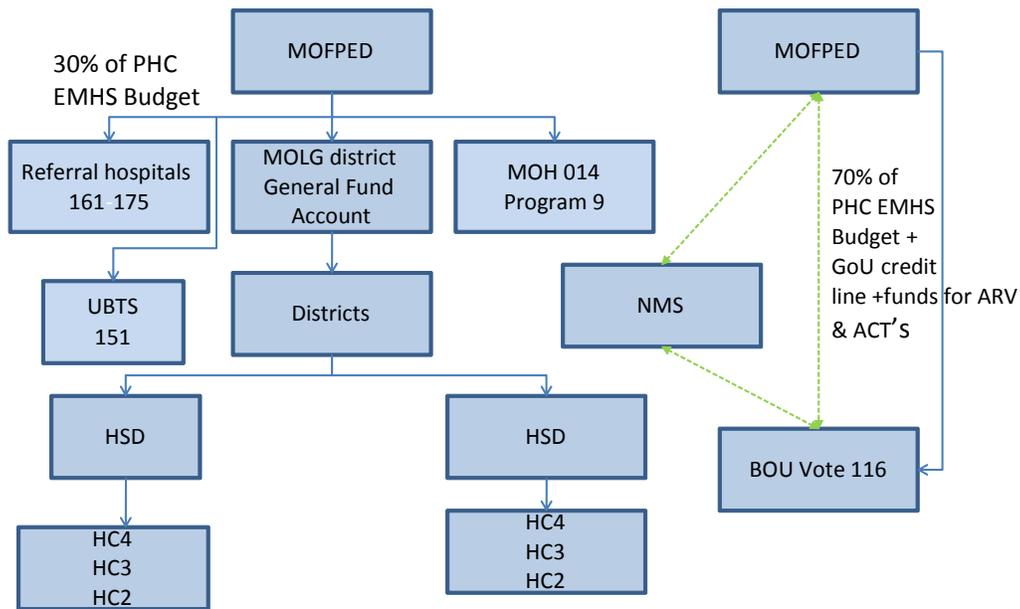
⁵⁹ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009.

⁶⁰ Ibid.

profit organization designed to operate on sound commercial principles, while maintaining equity of access to medicines.⁶¹

Vote 116 In the first year of Vote 116’s operation (2009/10), MoFPED released 30% of the annual EMHS budget through the decentralized PHC grant system. This release, including Mulago and Butabika hospitals, was equivalent to UGX 9.6 billion.⁶² Other financial releases for shared national services under the MoH Program 9 remained unchanged (Figure 13).

Figure 13: Flow of funds for minimum health care package after Vote 116



The MoH and MoFPED have yet to issue guidelines to health facilities on the operational modalities of the new arrangement. Due to the lack of clarity, health facilities ordered EMHS under the previous EMA credit line system, and NMS supplied the units with EMHS totaling to UGX 3.7 billion. However, there is no provision in the current fiscal budget to settle this liability. Parliament appropriated UGX 74.9 billion to Vote 116 allocated as follows⁶³—

- UGX 47.3 billion for ACTs and ARVs
- UGX 7.0 billion handling fees due to NMS (7% on ACT/ARV and 18% on EMHS)
- UGX 20.6 billion for other EMHS (UGX 7 billion for Mulago Hospital and UGX 0.7 billion for Butabika Hospital)

To date there have been three treasury releases to Vote 116—

⁶¹ Medical Care Development International and SEREFACO. Consultancy Services for the Policy Review of the Role of the National Medical Stores in the Public and Private Health care System in Uganda. August 2006.

⁶² SURE Policy Option Analysis, Survey data 2010.

- UGX 1.9 billion (24 August 2009) release on account
- UGX 45 billion (6 November 2009)
- UGX 14 billion (10 February 2010)

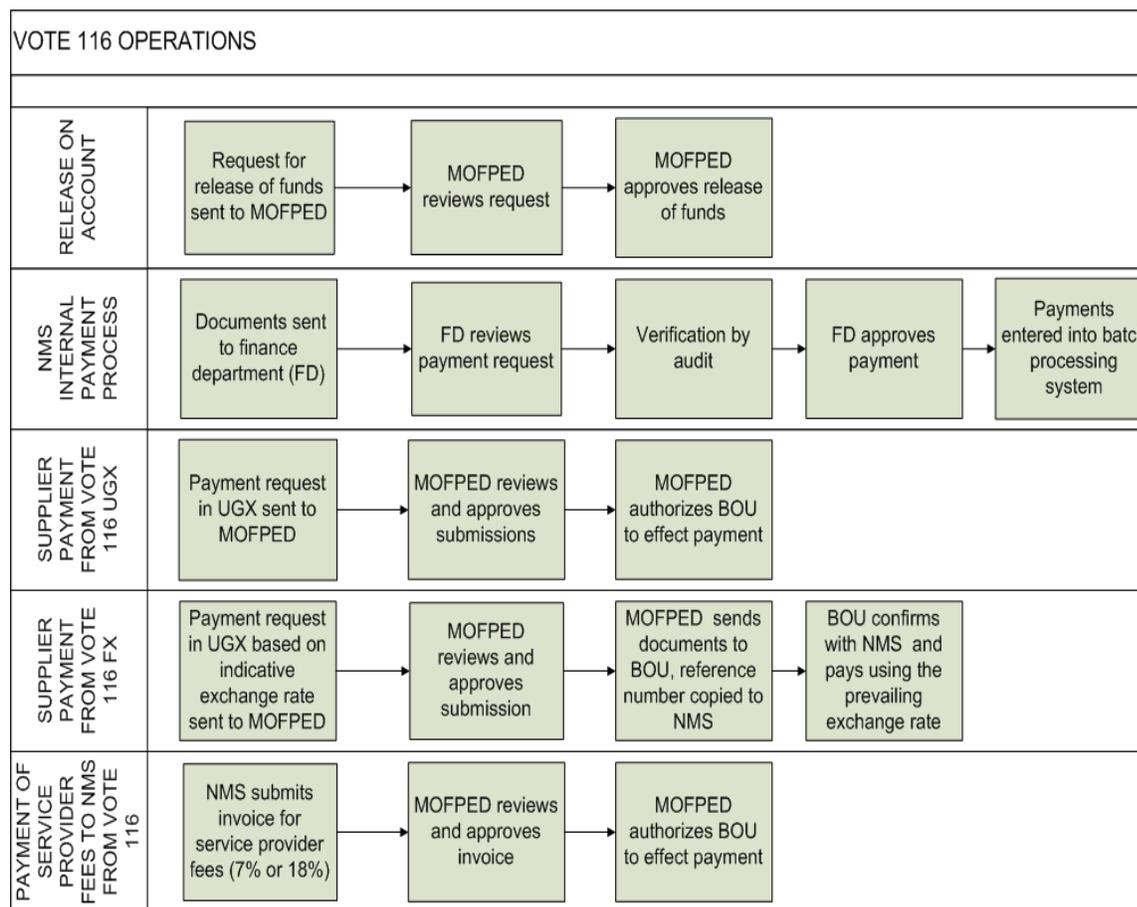
The National Medical Stores requested UGX 28 billion for the third release, but by April 2010, only half the amount had been made available. Vote 116 is subject to standard treasury regulations; any funds unused by the end of the financial year (30 June) automatically revert to the consolidated fund. This is unlike the EMA, where facility credits were rolled over to subsequent accounting periods.

In financial year 2009/2010, the Government of Uganda did not transfer any funds to the EMA. While the approved MoFPED budget estimates of 2009/10 included the annual Danida contribution of UGX 6.8 billion to the EMA, these funds were withheld. Danida instead transferred UGX 3.5 billion directly to JMS to support the private not-for-profit credit line. There is no provision for financing the private not-for-profit sector under the Vote 116 arrangement, and JMS is not included as an alternative service provider. NMS is the sole supplier for EMHS to all government facilities under Vote 116. MoFPED pays NMS a standard handling fee based on the value of commodities procured: 18% on EHMS and 7% on ACTs and ARVs. It remains unclear if the government will release the 30% PHC allocation for EMHS through the decentralized system in the coming financial year or if 100% of these allocations will be channeled through Vote 116.

Figure 14 summarizes the four key stages involved in operation of Vote 116—

- Replenishment of Bank of Uganda Vote 116 account is dependent on NMS providing MoFPED with an acceptable work plan, accountability for past releases, and a request for further release on the account.
- NMS maintains its internal procedures for supplier payment, but sends payment requests to MoFPED using a batch system for review, approval, and authorization.
- Suppliers are paid directly from funds held on Bank of Uganda Vote 116 account upon authorization by MoFPED.
- MoFPED pays NMS its service provider fees after NMS submits invoices and proof of procurement.

Figure 14: VOTE 116 operations



FX : Foreign Currency payments

The new arrangement addresses some inherent challenges that had been posed by the decentralized PHC grants and EMA credit line. For example, Vote 116 addresses health facilities not using PHC funds at NMS or JMS and significantly shortens the NMS operating cash cycle, where payment delays by the MoH and health facilities stretched to over three months.

In addition, Vote 116 eliminates—

- Lead times for fund transfer to regional referral hospitals, general hospitals, and health sub-districts of 12, 20, and 27 days, respectively⁶⁴
- Delayed release to districts of PHC funds earmarked for EMHS as a result of non-compliance with accounting guidelines
- Health facilities’ non-compliance with PHC grant expenditure guidelines
- Reallocation by local governments of funds earmarked for EMHS to other budgets
- Accumulation of unpaid debt that negatively affected NMS capacity to procure EMHS

⁶⁴ Reev Consultant International. Final Report Essential Medicines and health Supplies Tracking Study. October 2009.

Implications

If the government is to maintain the new system, strategic issues need to be considered. The potential efficiencies outlined above have to be placed within the following context—

- Availability of EMHS in the entire public health system depends on the performance of NMS as the sole procurement and supply agency.
- There is no provision for health facilities to procure EMHS from alternative sources in case NMS is out of stock .
- Unused funds through Vote 116 revert to the consolidated fund at the close of the financial year.
- No formal framework exists for Vote 116 that defines the roles and responsibilities of MoFPED , MoH, Ministry of Local Government, and NMS to ensure availability of EMHS .
- The current system has no internal control mechanism to monitor pricing, invoicing, proof of delivery, or performance.

Operationally, the National Medical Stores management and staff have to adjust to new challenges—

- NMS now has responsibility for allocating funds to health facilities, which is a shift from MoH and health sub-districts.
- NMS must now manage 2,400+ health facility accounts as opposed to 281 accounts.
- NMS is wholly dependent on service provider fees charged on ACTs/ARVs (7%), EMHS (18%), and third-party handling fees to cover its operating costs.

Table 5 below shows that total expenditure on EMHS by the government in 2009/10 will decrease by a minimum of UGX 6.8 billion, which is exactly equivalent to the Danida contribution to the EMA . In the short term, this deficit has been partially covered by Danida support of UGX 3.5 billion to the private not-for-profit sector. Danida will end its support to the Uganda health sector at the end of the FY 2009/10, leaving the government to fill this financing gap . Importantly, government and Danida financial support to the private not-for-profit sub-sector was UGX 6.92 billion in 2008/09, in addition to in-kind ACTs and ARVs worth UGX 9.2 billion (total UGX 16.12 billion). The MoFPED -approved budget estimates for FY 2009/10 include a provision of UGX 17.74 billion for non-wage recurrent expenditure for private not-for-profit facilities, but the proposed mechanism is unclear about if these funds will be distributed to the sector or if they will be used for EMHS.

Table 5: Government EMHS expenditure in 2008/09 and 2009/10 (UGX billions)

	Government facilities 2008/09	Private not-for-profit facilities 2008/09	TOTAL 2008/09	Total 2009/10 allocations and expenditures in government facilities
PHC grant	17.6	4.4	22.0	6.6
EMA fund	10.1	2.5	12.6	0
MULAGO Hospital	10.0	0	10.0	3.0
BUTABIKA Hospital	1.0	0	1.0	0.3
VOTE 116 EMHS	0	0	0	20.6
SUB-TOTAL	38.7	6.9	45.6	30.5
ACT/ARVs	36.8	9.2	46.0	47.3
NMS VOTE 116 HANDLING FEES	0	0	0	7.0
TOTAL	75.5	16.1	91.6	84.8

SOURCE: SURE POA SURVEY DATA, 2010

Government facilities had a reduction in EMHS funding of UGX 8.18 billion between FY 2008/09 and 2009/10. However, without NMS charging the health facilities its traditional mark up of 26–35% and instead receiving a handling fee of 18% by MoFPED, the actual quantity of supplies potentially remains the same at a constant price basis. The Vote 116 allocation is anticipated to progressively increase from UGX 75.7 billion in 2008/09, to UGX 90.85 billion in 2009/10, and to UGX 109.02 billion in 2010/11.⁶⁵ This should close the financing gap in nominal terms.

Analyzing the trends and patterns of expenditure on EMHS from the various funding sources over time would be instructive, however, little data is available on off-budget expenditures by different country partners. The MoH and MoFPED have noted that even for project expenditures within the MTEF, data collected through annual donor surveys as part of the annual budgetary process is often incomplete and unreliable. The three-year rolling procurement plan initiated by the MoH in 2006/07, evaluation of the plan, and subsequent update of the data have not occurred.

4.2.4 SURE Financial Analysis

This section summarizes SURE's analysis of funding sources and product categories. The existing funding gap is then quantified and reviewed within the context of the broader macroeconomic framework.

Funding sources

The SURE program undertook an extensive survey of all key partners involved in financing EMHS in Uganda. We systematically collected data on actual expenditure on EMHS in addition to the value of commodities received in the country from July 2008 to June 2009. As much as possible, we triangulated data on expenditures against actual value of goods received through the different procurement /storage agencies and commodity tracking systems.

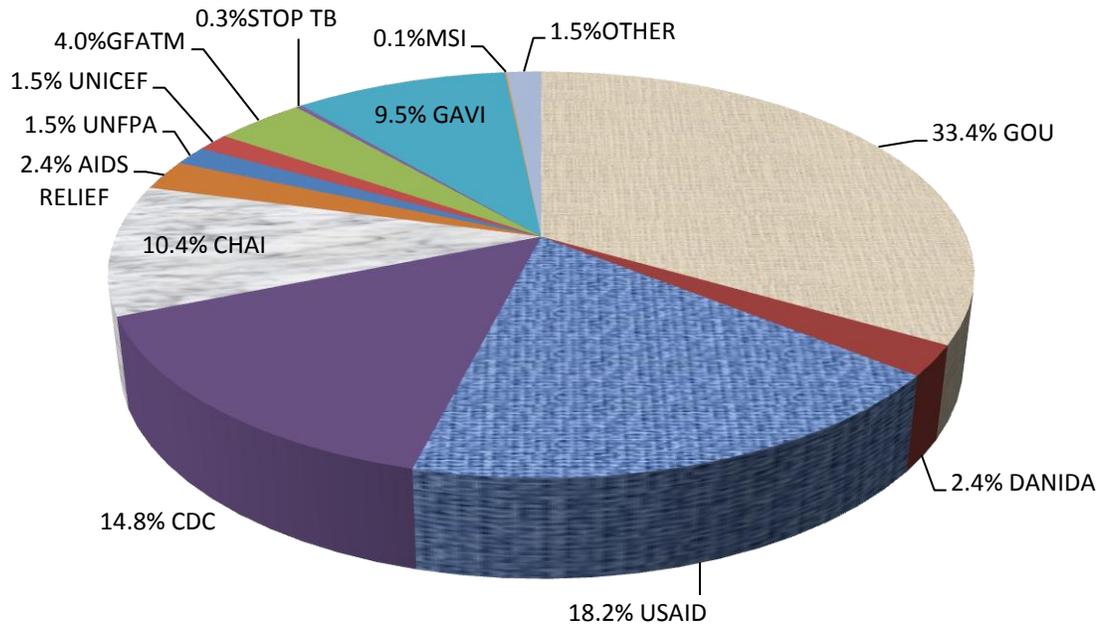
Data limitations include—

⁶⁵ Ministry of Finance Planning and Economic Development. MOFPED National Budget Framework Paper 2010/2011-2014/2015.

- Possible spill-over of commodity deliveries from commitments/expenditures incurred in the previous financial year
- Commodities delivered after June 2009 arising from financial commitments made in 2008/09
- Partners having differing accounting periods
- Inclusion or exclusion of related procurement costs within overall EMHS expenditures or commodity costs
- Discrepancies related to valuation of donations and in-kind commodities

Figure 15 shows that the U. S. government was the single largest financing source for EMHS, mainly through PEPFAR and PMI, contributing 35.4% of total funding. Despite the large financial commitments arising from the Round 3, 4, and 7 grants, Global Fund contributions were limited due to management and other structural constraints that remain unresolved. Significantly, Government of Uganda contributions, including donor budget support was 33.4%, driven mainly by poverty action fund expenditures on ACTs and ARVs that filled the gap from delayed Global Fund resources. Contributions from CHAI exceeded GAVI’s total expenditure to support the procurement of pentavalent vaccines. The CHAI expenditure focused mainly on pediatric, PMTCT, and second-line ARVs as well as HIV-related laboratory commodities. Table 6 summarizes the findings.

Figure 15: Percentage contribution by funding source



SOURCE: SURE POA SURVEY DATA, 2010

Table 6: 2009/10 EMHS financing including MTEF and off-budget expenditure by funding source (USD millions)

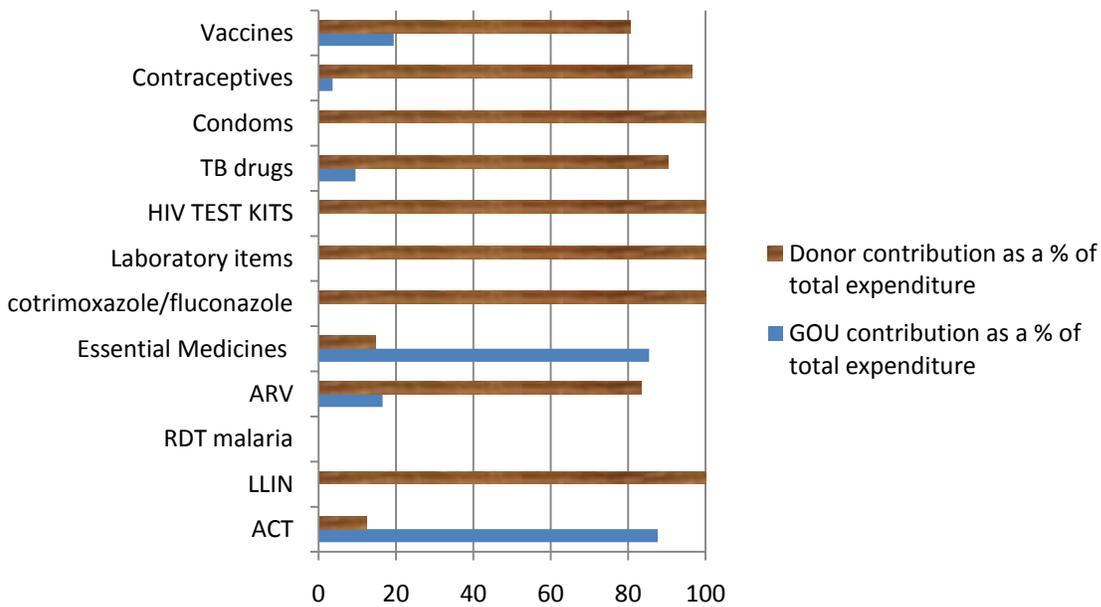
Item category	GOU	DANID A	USAID/ PEPFAR	USAID/ PMI	PEPFAR /CDC	CHAI	AIDS				GDF STOP				DFID	JICA	Other	Totals
							RELIEF	UNICEF	UNFPA	GFATM	ON	DONATI	TB	GAVI				
ACT	14.51	-	-	1.00	-	-	-	0.05	-	-	-	-	-	-	-	-	1.00	16.55
LLIN	-	-	-	5.65	-	-	-	0.28	-	-	-	-	-	-	-	-	-	5.93
RDT malaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ARV	8.89	-	13.45	-	10.85	13.34	3.17	0.25	-	3.86	-	-	-	-	-	-	-	53.82
Essential Medicines	19.54	3.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.89
Cotrimoxazole/fluconazole	-	-	0.15	-	0.83	0.05	0.17	0.16	-	-	-	-	-	-	-	-	1.12	2.48
Laboratory items	-	-	-	-	4.22	0.91	-	-	-	-	-	-	-	-	-	-	-	5.13
HIV TEST KITS	-	-	-	-	4.79	0.22	-	1.41	-	-	-	-	-	-	-	-	-	6.42
TB drugs	0.22	-	-	-	-	-	-	-	-	1.68	0.00	0.39	-	-	-	-	-	2.30
Condoms	-	-	0.60	-	-	-	-	-	1.15	-	-	-	-	0.10	-	-	-	1.86
Contraceptives	0.20	-	4.51	-	-	-	-	-	0.87	-	-	-	-	-	-	-	0.02	5.60
Vaccines	3.20	-	-	-	-	-	-	-	-	-	-	-	13.30	-	-	-	-	16.50
Totals	47	3	19	7	21	15	3	2	2	6	0	0	13	0	-	-	2	139.47
% contribution by funding source	33.4	2.4	13.4	4.8	14.8	10.4	2.4	1.5	1.5	4.0	0.0	0.3	9.5	0.1	0.0	0.0	1.5	

SOURCE: SURE POA SURVEY DATA, 2010

Product categories

Our analysis is a snapshot; the pattern of contributions should be studied over time to fully understand the sustainability and predictability of the different financing sources. For example, CHAI funding draws to a close at the end of 2010, Danida support to the health sector ends at the end of FY 2009/10, and future funding from PEPFAR for laboratory commodities depends on a new cooperative agreement by the end of 2010. If not factored into the national planning process, the enormous funding gaps arising from these developments have far-reaching implications. For example, the government’s ARV procurement is restricted to two first-line adult formulations. With the exit of CHAI, a potential funding gap of USD 15 million will specifically affect the availability of pediatric ARVs, PMTCT supplies, and second-line ARVs. Given the documented levels of government financing for different commodities, we analyzed potential vulnerabilities (Figure 16).

Figure 16: Government financial contribution by commodity group



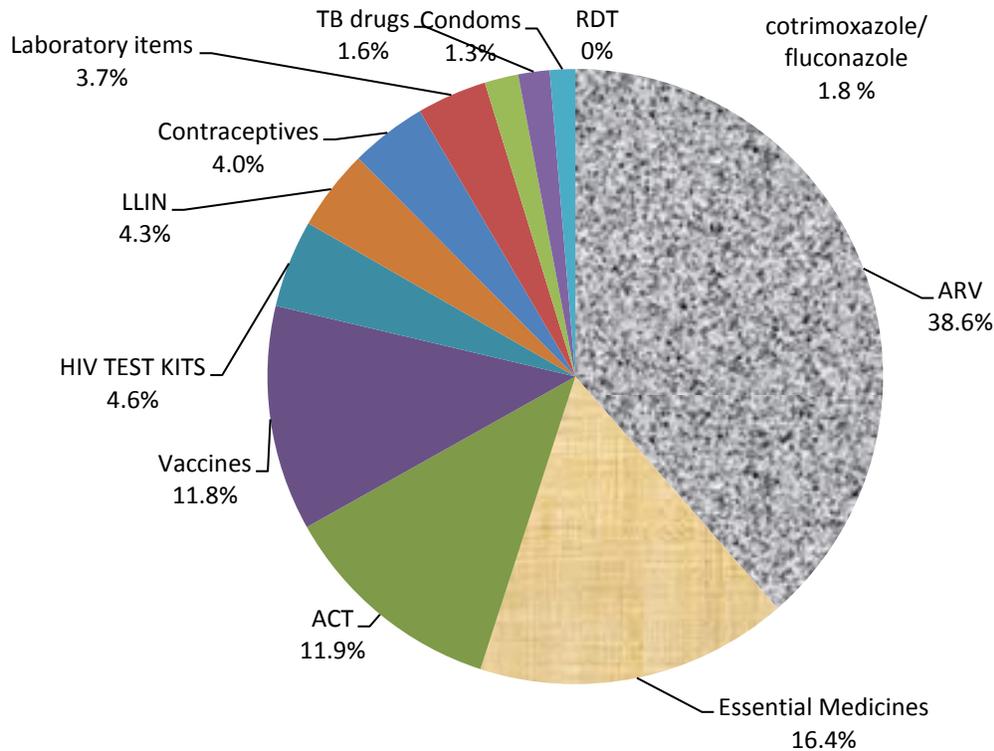
SOURCE: SURE POA SURVEY DATA, 2010

We conclude that other than the basic medicines and supplies required to deliver Uganda’s minimum health care package, excluding vaccines, ACTs, and ARVs, the government contributed less than 20% of the total expenditure by commodity group in 2008/09, and in several commodity groups, it contributed nothing. The only exception was ACTs, where government contribution to total expenditure was over 80%. Further analysis is needed to establish how government expenditure matched overall national requirements of ACT and the sustainability of this financing source.

Any sudden reduction in funding from donors will immediately disrupt the availability of commodities required to deliver the Uganda national minimum health care package. With a large proportion of donor funding remaining off-budget, the risks are compounded, unless a robust coordinating, monitoring, and reporting mechanism is established. The government and its development partners need to address the challenges of equity and allocative efficiency, especially in a resource-constrained environment where increasingly expensive interventions may displace financial expenditure.

As demonstrated in Figure 17, donor program or disease-specific interventions may result in unbalanced resource allocation between commodity groups, without taking into account population coverage. Of the total available resources, 47.2% were allocated to HIV-related commodities, 11.8% to pentavalent vaccines, and 11.9% to ACTs. Compared to 16.4% for all other medicines and supplies, a case could be made for aligning funding to match sector priorities.

Figure 17: Resource allocation by commodity group



SOURCE: SURE POA SURVEY DATA, 2010

Funding gap quantification study

Based on the findings of the MoH national quantification study of 2009, we compared the costed annual requirements for EMHS and available financing as captured by the SURE POA survey. (Table 7).

The quantification study used two alternative methodologies: the consumption and the prescription methods. The prescription method using reported dispensing data tends to under-estimate actual requirements. For this analysis, we used data based on the costed demand estimate from the consumption method. We made an adjustment to consider demand only in government facilities. Estimated demand in government facilities was used as a basis for assessing the funding gap, because the SURE survey obtained accurate data on expenditures in the public sector for most commodity groups. Following further analysis, the costing method used to arrive at the estimated annual requirement was reviewed, and a number of adjustments were made—

- NMS prices used in the quantification study for ACTs were based on previous supplies from the Global Fund. The price of a single adult dose of ACT was USD 1.4 compared to the contracted

price of USD 2.4 in 2008/09. This necessitated a downward adjustment of the Government of Uganda contribution of USD 11.6 million by a factor of 1.7.

- The adjustment made for the government's ACT expenditure is also applicable to government procured ARVs, but given that this contributed to less than 20% of the overall funding, its impact on the assessment of the funding gap is negligible.
- Current 2008/09 pricing of contraceptives led to an upward adjustment in the estimated requirement of contraceptives in public facilities to USD 1.8 million.
- Global Fund-financed procurement of TB drugs covered an estimated two-year requirement; therefore, the assessment had to double the annual requirement for comparison.
- The annual estimate of ARV requirements was based on a target population of 220,000 patients by the end of 2009, based on current guidelines on treatment eligibility. The targeted coverage is not necessarily correlated with actual need. Doubling the target population leads to a completely different interpretation of the data.
- Other prices for medicines and supplies were based on the NMS price list, which was current at the time of the quantification study; the same applies to price estimates for ARVs.

Table 7: Estimated annual EMHS requirement (USD Millions)

Commodity	Quantified requirement	Total resource envelope	Government contribution	Donor contribution	Funding gap	% of estimated requirement financed
EMHS Including anti-cancer drugs public facilities	36.1	18.3	15.6	2.7	-17.7	51
ACTs in public facilities	17.1	13.2	11.6	1.6	-3.8	78
ARVs including PMTCT	57.3	53.8	8.9	44.9	-3.4	94
Vaccines routine and supplemental (2008/09 estimates)	29.4	16.5	3.2	13.3	-12.8	56
Contraceptives	1.3	5.6	0.2	5.4	4.3	418
Condoms	3.2	1.9	-	1.9	-1.4	57
Anti-TB drugs	1.3	2.3	0.2	2.1	1.0	179
Lab supplies and consumables	21.6	5.1	-	5.1	-16.5	24

SOURCE: REEV CONSULTANT INTERNATIONAL⁶⁶

Data⁶⁷ indicate that funding for medicines and health supplies has decreased from USD 1.20 per capita in 2002/03 to USD 0.72 per capita in 2006/07, which is far less than the HSSP II projections of USD 5.30 per capita needed for essential medicines and health supplies.⁶⁸

⁶⁶ Reev Consultant International. Final Report Essential Medicines and health Supplies Tracking Study. October 2009 and SURE Policy Option Analysis, Survey Data 2010.

⁶⁷ Management Sciences for Health. The East African Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

⁶⁸ MOH (Ministry of Health, Uganda). Annual Health Sector Performance Report FY 2006 /07. October 2007.

Based on the findings of the MoH national quantification study in 2009, Table 8 compares the costed annual requirement for EMHS and available financing presented previously.

Table 8: Estimated expenditures on medicines in Uganda based on identified sources

Out-of-pocket health expenditure per capita	USD 11.40 ⁶⁹
Out-of-pocket expenditure on medicines	45%
Estimated per capita out-of-pocket expenditure on medicines	USD 5.13
Population (2007 estimate)	30,262,610
Estimated total out-of-pocket medicines expenditures	USD 155,247,189
Government per capita expenditure on medicines and supplies (2006/07)	USD 0.72
Estimated government expenditure on medicines	USD 21,789,079
Donor per capita expenditure on medicines and supplies (2006/07)	USD 3.34
Estimated donor expenditure on medicines	USD 101,077,117
Estimated total expenditure on medicines and supplies	USD 278,113,385
Total per capita expenditure on medicines and supplies	USD 9.19
Out-of-pocket	56%
Public (including donor)	44%

SOURCE: Management Sciences for Health. The East African Drug Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008

After making the above adjustments, the picture that emerges resembles both the findings of previous studies as well as the recurrent anecdotal reports on the prevalence of shortages of EMHS in health facilities across the country (Table 9).

⁶⁹ Management Sciences for Health. The East African Drug Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

Table 9: Adjusted assessment of the funding gap (USD millions)

Commodity	Quantified requirement 2009	Total resource envelope 2008/09	Government contribution 2008/09	Donor contribution 2008/09	Funding gap	% of estimated requirement financed
EMHS including anti-cancer drugs in government facilities	36.1	18.3	15.6	2.7	-17.75	51%
ACTs in government facilities	17.1	8.5	6.8	1.6	-8.61	50%
ARVs including PMTCT in government/private not-for-profit facilities*	57.3	53.8	8.9	44.9	-3.43	94%
Vaccines routine and supplemental (2008/09 estimates) in government/private not-for-profit facilities	29.4	16.5	3.2	13.3	-12.85	56%
Contraceptives in government facilities**	1.8	5.6	0.2	5.4	3.80	311%
Condoms in government facilities	3.2	1.9	0	1.9	-1.37	57%
Anti TB drugs GOU & PNFP facilities	2.6	2.3	0.2	2.1	-0.30	88%
Lab supplies and consumables	21.6	5.1	0	5.1	-16.47	24%

SOURCE: SURE POA SURVEY DATA, 2010; MoH DRUG QUANTIFICATION STUDY, 2009

*If the coverage of ARVs is expanded to 440,000 patients, only 47% of the financing requirement for ARVs was covered in 2008/09.

**The bulk of financing for contraceptives is channeled through social marketing, which explains the apparent overfunding because the comparator figure only covers the estimated demand in government facilities.

The funding gap data requires careful interpretation. The data is extremely sensitive to unit commodity pricing assumptions as well as targeted population coverage. Furthermore, funding availability does not directly translate into commodities availability at the health facilities. Other supply chain variables play a major role; for example, in the laboratory commodity credit line, where UGX 25 billion in 2009/10 was available, health facilities had drawn down less than 30% of the available commodities with less than three months to the end of the financial year.⁷⁰

Even with the qualifications stated, based on the MoH drug quantification study and the SURE POA, a funding gap of close to 50% exists for basic medicines and health supplies required to deliver the Uganda national minimum health care package (Table 10).

Table 10: Summary of funding gap per capita (USD)

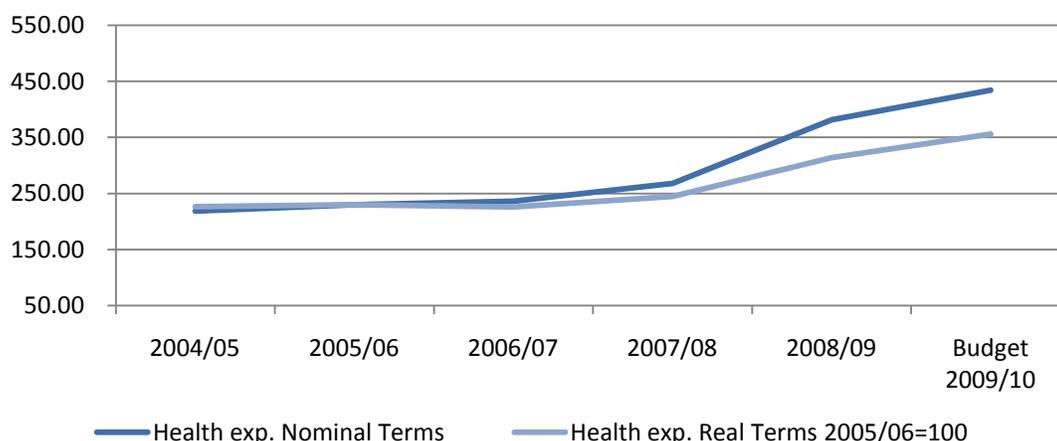
	Per capita quantified requirement government/private not-for-profit facilities (MoH quantification study 2009)	Per capita quantified requirement government facilities (MoH quantification study 2009)	2008/09 actual expenditure (SURE field data)	2006/07 public per capita expenditure on medicines and supplies
EMHS	1.6	1.2	0.76	0.72
ACTs	0.7	0.57	0.55	nil

SOURCE: SURE POA SURVEY DATA, 2010; MoH DRUG QUANTIFICATION STUDY, 2009

Gap in broader macroeconomic frameworks

After analyzing the funding gap for EMHS based on quantification studies and data on government and donor funding, it is important to review the macroeconomic perspective of health sector financing in Uganda. Overall, total government expenditure on health has increased in both real and nominal terms over the HSSP II period (Figure 18).

Figure 18: Trend in total Government of Uganda health expenditure



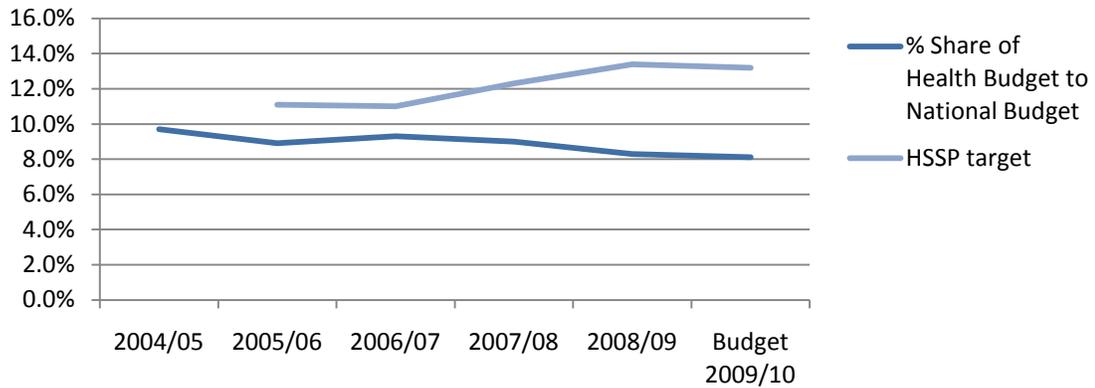
SOURCE: MoFPED BUDGET PERFORMANCE REPORTS, 2004/05-2008/09

⁷⁰ SURE Policy Option Analysis survey data 2010

The most significant increase of 46.7% occurred between FY 2007/08 and 2008/09, due to increased donor projects included in the MTEF and new government expenditure on ARVs and ACTs.⁷¹

On the other hand, the percentage allocation of resources to the health sector as a proportion of the total national budget has steadily declined over the same period, reaching an all time low of 8.3% in FY 2008/09 (excluding donor projects) (Figure 19). Expenditure on health as a proportion of national budget has remained way below the HSSP II targets, and it is unlikely that the government will meet the Abuja target of 15% by 2015.

Figure 19: Health expenditure as a percentage of the national budget



SOURCE: MOH ANNUAL HEALTH SECTOR PERFORMANCE REPORTS, 2004/05-2008/09

Total health sector release including budget support and donor projects in the MTEF was equivalent to USD 314 million with a public expenditure of USD 12.7 per capita.⁷² This per capita expenditure figure does not include off-budget financing, which as noted earlier, constitutes significant financial contribution to the health sector. Total government and donor expenditure on EMHS including off-budget projects, but excluding consolidated appeal process expenditure and direct support to district and private not-for-profit health facilities by donor projects, was equivalent to USD 139 million, equivalent to USD 4.3 per capita.⁷³ The cost of delivering the Uganda national minimum health care package, excluding ACTs, ARVs, and pentavalent vaccines, was estimated at USD 28 per capita.⁷⁴ More recent estimates put this figure at USD 41.2 in 2008/09 for all commodities and services required to deliver the health care package, and this figure is expected to rise to USD 47.9 in 2010/11.⁷⁵ Comparing total public sector per capita expenditure and national total health expenditure in Figure 20, it is clear that private and donor financing contribute to over 60% of the gap.

⁷¹ MOH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009

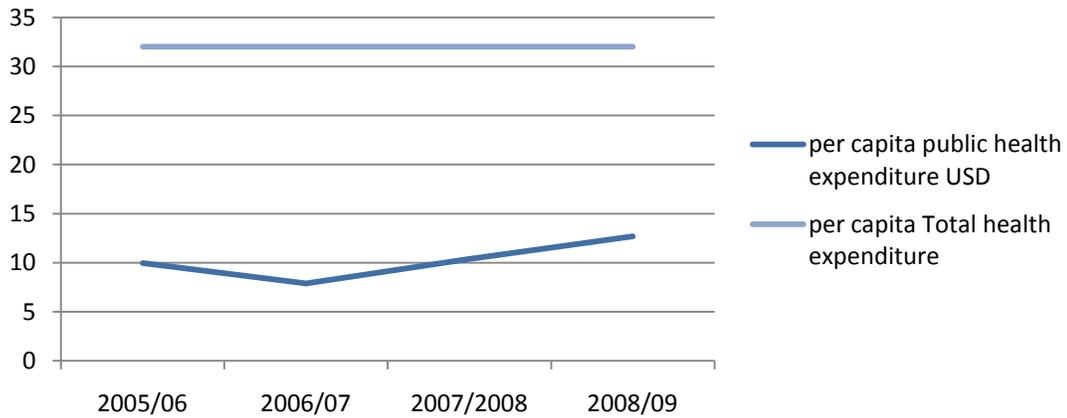
⁷² Ibid

⁷³ SURE Policy Option Analysis, Survey Data 2010.

⁷⁴ MoH (Ministry of Health, Uganda). Health Financing Strategy 2002.

⁷⁵ Health Sector Strategic Investment Plan 2010/2015.

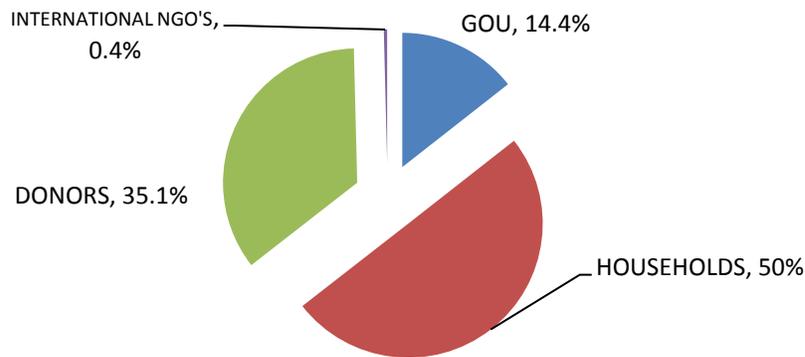
Figure 20: Per capita public sector health expenditure



SOURCE: MOH ANNUAL HEALTH SECTOR PERFORMANCE REPORTS, 2004/05-2008/09

Data from the most recent round of the national health accounts (2006/07) estimates that households contribute 50% of the total health expenditure excluding certain health-care related expenditures such as infrastructure and human resource development (Figure 21). Taking the reported per capita total health expenditure of USD 32 and resource distribution by function data in Figure 21 and 22, expenditure on medicines and supplies is USD 9.28⁷⁶ per capita. Other data sources indicate 56% out of pocket expenditure, 45% expenditure on medicines on supplies and a per capita expenditure of \$ 9.19 medicines and supplies.⁷⁷ Based on data from the two available sources out of pocket expenditure on EMHS is about \$ 9.0 per capita.

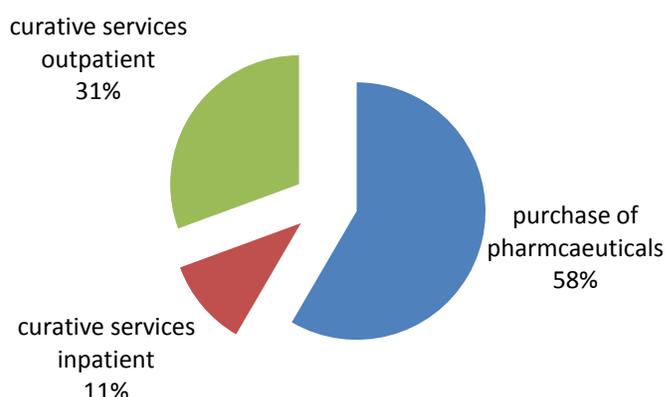
Figure 21: Percentage contributions to total health expenditure



SOURCE: MOH NATIONAL HEALTH ACCOUNTS, 2006/2007 (ANNEX 5.7)

⁷⁶ Calculation of the \$9.28: In accordance with the WHO, National Health Accounts; concepts, THE (Total health expenditure)= public health expenditure+private health expenditure. The public health expenditure is inclusive of government and donor sources. Based on extract from the Uganda MOH NHA 2006/2007 (annex 5.7), the per capita NHE= \$32.99 and the per capita THE = \$ 32. The reported % contribution by households (out of pocket) to NHE is 50%. Taking 50% of \$ 32 of the THE would mean that households (out of pocket) were contributing \$ 16 per capita. The data also reported that 58.4% of household expenditure on health is spent on pharmaceuticals and medical sundries, while 30.6% goes to outpatient care and 11% to inpatient care. Taking 58.4% of \$ 16 gives as an indicative figure of \$ **9.28** per capita spent out of pocket (by households) on pharmaceuticals and medical sundries

⁷⁷ Management Sciences for Health. The East African Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

Figure 22: Analysis of private out-of-pocket expenditure by function

SOURCE: MOH NATIONAL HEALTH ACCOUNTS, 2006/07

4.2.5. Summary of overall health sector financing findings and options

- The health sector is grossly underfunded; estimates indicate that only 30% of the HSSP I financing requirement was met.
- The trend in government health expenditure over the HSSP II period does not indicate that the funding gap will close.
- A significant proportion of donor funding remains off-budget, which significantly affects reported per capita expenditure on health.
- 60% of health commodity financing is donor dependent.
- Government and donor contribution to the health sector are not prioritized or aligned, resulting in duplication and inefficient resource allocation.
- 50% of the total national health expenditure is out-of-pocket, which affects the poorest segment of society.
- 58% of this expenditure is committed to the purchase of pharmaceuticals.
- The total government and donor financing for EMHS in 2008/09 was equivalent to USD 4.3 per capita.
- The estimated per capita out-of-pocket expenditure on pharmaceuticals and supplies is USD 9.0.
- Availability and accessibility of financial spending data is greatly limited; there is a need for a mechanism to routinely track such data to facilitate planning and policy formulation.
- There is a need to establish capacity at all levels in pharmaceutical financial planning and management to make better use of limited funds, identify gaps and make necessary actions and prioritization.

The POA identified a number of limitations affecting the collection and availability of financing data including the multiplicity of funding mechanisms and sources, differing planning and reporting periods used by different partners, spill-over of commodity deliveries from commitments or expenditures incurred in the previous financial year, inclusion or exclusion of related procurement costs within reported EMHS expenditures or commodity costs, and challenges related to the valuation of donations and in-kind commodities. Systems need to be developed that can be used to collect data on public sector EMHS financing (government and donor sources) to facilitate planning and optimize resource allocation, but the task is more challenging than initially anticipated.

Through local and international short-term technical assistance, SURE will develop a framework and a detailed strategy for establishing a national-level financial tracking system for all EMHS including vertical program supplies and laboratory supplies. SURE will implement the tracking system in Year 2, but obtaining data in a sustainable manner is more challenging than anticipated. The financial data are critical inputs in a planned Quantification and Procurement Planning Unit, and eventually also in the pharmaceutical information portal. But in Year 2, SURE plans to develop a more independent tracking database to gain experience before expanding.

4.3 Availability of medicines and supplies

Although in principle the public sector exists to serve the entire population, including the supply of EMHS, and despite the abolition of user fees in 2001, successive studies show that the demand for EMHS still far exceeds supply.⁷⁸ Of great concern is the report that only 65% of individuals for whom drugs were prescribed in the public sector had to pay for them in the public or private sectors.⁷⁹

A survey conducted in 300 households found that the main reason for not receiving all of the medicines prescribed in public facilities was related to no availability of medicines (44% of respondents). Comparing availability percentages among public sector facilities, private pharmacies, and private not-for-profit facilities, private pharmacies were far more likely to have the indicator medicine on hand.⁸⁰ In 2004, availability of a list of 13 medicines was found to average 76% in the private sector, 36% in the NGO sector, and only 14% in the public sector.⁸¹ In the government's most recent health sector performance report, out of 36 facilities, 65% had stock-outs of at least one of six indicator medicines over six months—and at the health center II level, where the majority of people seek care, 88% had stock-outs even after the kit system had been reintroduced at lower primary health care levels.⁸² In 2008, drug availability was found to be 46% for a list of 27 essential medicines measured on the day of the survey.⁸³

In spite of many efforts to strengthen supply chain effectiveness and efficiency and build supply chain capacity at all levels, there has been a steady decrease in medicines availability, reaching the lowest level in 2008/09 with only 26% of facilities without stock-outs of six tracer medicines.⁸⁴ Several factors contribute to low availability including weak quantification practices and stock management, multiple and parallel supply structures, but most importantly, insufficient funding.

For EMHS to be available at an affordable cost or free of charge in the public sector, a number of options exists—

⁷⁸ Xu, K. D.B. Evans, P. Kadama, J. Nabyonga, P. Ogwang Ogwal, P. Nabukhonzo, et al. 2005. Understanding the Impact of Eliminating User Fees: Utilization and Catastrophic Health Expenditures in Uganda. *Social Science & Medicine* 62(2006):866–876.

⁷⁹ World Bank. Improving Health Outcomes for the Poor in Uganda Current status and implications for health sector development. Africa Region Human Development Working Paper Series. Human Development Sector Africa Region. The World Bank. 2005.

⁸⁰ MoH. (Ministry of Health, Uganda). Uganda Pharmaceutical Sector Baseline Survey. Kampala: Health Action International and World Health Organization. 2002.

⁸¹ WHO/HAI. (World Health Organization/Health Action International). Government of Uganda, Uganda Medicine Pricing Survey Report April 2004 (Kampala: 2004).

⁸² MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2006/07, Oct 2007.

⁸³ MoH (Ministry of Health, Uganda). Pharmaceutical Situation Assessment –Level II. Health Facilities Survey Uganda. Report of a survey conducted July – August 2008. 2008.

⁸⁴ MoH (Ministry of Health, Uganda). Annual Health Sector Performance Report, FY 2008/09, 1st Draft, October 2009.

- **Reduce the need:** Narrow the gap between what is needed and what is available by strictly prioritizing procurement and by reducing the list of EMHS using a prioritization approach.
- **Increase available funds:** Increase the funds available for EMHS by at least USD 1 per capita and minimize waste, leading to more funds becoming available for EMHS procurement. Increased funding can be achieved through increased government/donor contribution or patient contribution combined with reduced waste and increased effectiveness and efficiency.
- **Increase out-of-pocket payment:** Develop and support alternate financing systems including private wings, user fees, health insurance, and community resource mobilization as identified in the National Health Policy 1999 and the HSSP II.

4.3.1 *VEN prioritization—an option to increase availability and access*

The essential drugs concept is fundamental to the pharmaceutical public sector in Uganda and is a basic pillar of the national drug policy. Based on the prevalence of diseases and how they are best treated in what level of the health care system, a limited number of medicines are selected and published in the Essential Medicines List of Uganda.⁸⁵ The Essential Medicines List identifies for each active ingredient the strength and formulation and at what level of care (HCII to hospital) that the medicines is to be used. The principle of the essential drugs concept is to limit the list of essential medicines that will guide procurement and use at all levels of the public and possibly also the private sector.

The essential medicines list of Uganda was prepared in 2007. Since then the Uganda Clinical Guidelines have been updated (2010). Therefore, the 2007 list is in need of updating to synchronize with the revised clinical guidelines. As part of the POA, we updated the 2007 essential medicines list on the basis of the Uganda Clinical Guidelines 2010 resulting in a 2010 essential medicines list. The new essential medicines list includes a total of 543 medicines of which 182 are for specialty use. Though all 543 medicines are on the draft 2010 essential medicines list, some are more important than others, which can be enumerated through VEN prioritization. The VEN classification classifies all the essential medicines into three categories—

- V:** ***Vital*** medicines are potentially lifesaving, and lack of availability would cause serious harm; must be available 100% of time
- E:** ***Essential*** medicines are effective against less severe but nevertheless significant forms of illness, but are not absolutely vital to providing basic health care
- N:** ***Necessary*** medicines are used for minor or self-limited illnesses, are of questionable efficacy, or have a comparatively high cost for a marginal therapeutic advantage

The results of the VEN classification of the draft essential medicines list 2010 is depicted in Figure 23 together with the number of vital medicines for use at the different levels of the health system (Figure 24). This analysis shows that the number of vital medicines is 105 general medicines and 44 specialty medicines. About 41% of the vital list should be available at HCII level, 54% at HCIII level, and the rest for HCIV and hospital levels.

⁸⁵ MoH (Ministry of Health, Uganda). Essential Medicines List for Uganda EMLU 2007. 2007.

Figure 23: Draft VEN classification of essential medicines list 2010

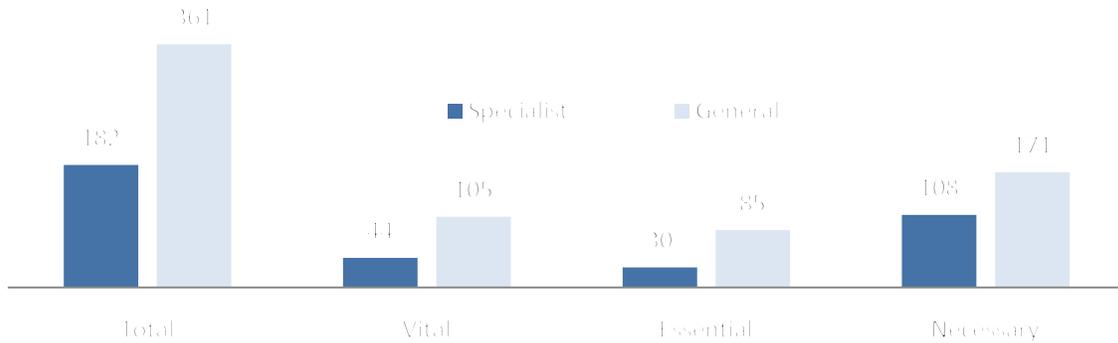
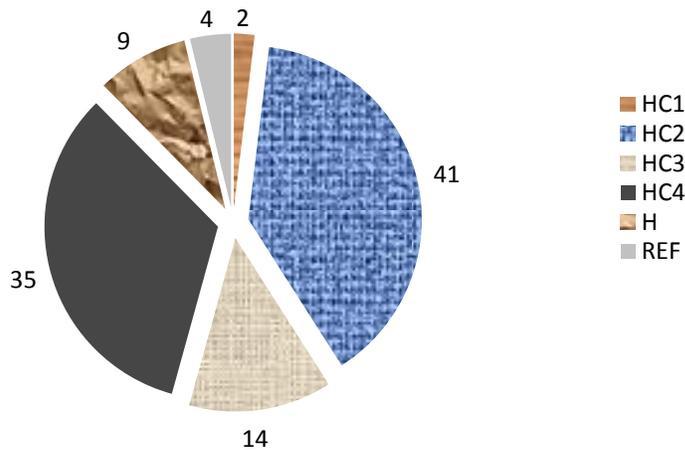


Figure 24: Level of care for 105 vital medicines in the essential medicines list 2010



When funds are insufficient to allow a facility to procure all the medicines that it will need according to its ordering instruction, the facility can prioritize its procurement using the VEN classification. The highest priority is all vital medicines, and if funds remain, essential medicines, followed by necessary or nonessential medicines. By using the VEN classification in procurement, the facility can better assure 100% availability of vital medicines; whereas, other medicines that are important but not lifesaving will need to be procured only if funds are sufficient or through out-of-pocket expenditure.

Focusing on 100 to 120 vital medicines simplifies procurement, stock and storage management, and use and will lead to increased supply chain efficiency and effectiveness. The introduction and adherence to VEN classification increases the availability of medicines for life-threatening diseases such as antibiotics, but does not ensure availability of medicines such as chlorpheniramine maleate, mebendazole, benzyl benzoate, folic acid, ibuprofen, etc. although these are essential medicines. They are beyond reach given the currently constrained budget allocated for essential medicines in Uganda.

Lack of medicines not only decreases quality of health care, but also demoralizes health workers' and patients' confidence in the public sector. It is thus important to match expectations with realities, even

when realities are not pleasant. The reality in Uganda is that the availability of all the medicines on the Essential Medicines List cannot be assured under the present budget. A more feasible option now is for the public sector to ensure that vital medicines are available all the time.

Adherence to the VEN concept not only requires the health facilities but also NMS and JMS to prioritize procurement of vital medicines and to a lesser degree Essential medicines. By focusing procurement on vital medicines, fewer medicines will be procured, but the 105 vital medicines will be procured in larger amounts, so their availability at all levels can increase. Such availability will rebuild confidence in the public sector system and improve patient care.

The POA found that 21% of the total funding for EMHS goes to supplies and laboratory commodities. To optimize the use of these funds, the VEN concept can also be applied to supplies to Uganda's Essential Supplies and Laboratory Supplies Lists. The results would classify the 144 supplies and commodities used today as 68 (47%) vital, 42 (29%) as essential, and 34 (24%) as necessary. Critical for the success of the VEN concept will be the ability of the government and its partners to ensure availability of vital medicines and supplies.

Will introduction of the VEN concept ensure 100% availability of vital EMHS?

Anecdotal evidence suggests that prioritization in procurement is not always guided by clinical importance (i.e., VEN classification) but by popularity, cost, and equity in vetting. Therefore, NMS and JMS procure both essential (E) and necessary (N) medicines, which the public sector health facilities request.

Applying the proposed VEN classification to NMS procurements from 2004 to 2009 showed that 30% of all medicines procured by value could be classified as E and N medicines. Shifting these funds to procurement of V medicines would increase availability of V medicines by about 30% (in value). This increase is presumably not sufficient to ensure 100% availability of V medicines because medicines are reportedly unavailable about half of the time. An increase in funding by 30% from about USD 0.70 cent to about USD 1, spent primarily on V items combined with other efforts to increase effectiveness and efficiency, would considerably increase the availability of vital medicines.

Based on data collected from Tororo district from the 2009/10 quantification and procurement plan using Vote 116 and laboratory vote (not including ARVs, ACTs, and reproductive health commodities), expenditures on EMHS per capita is about USD 0.75 (USD 0.71–0.76) and the majority of Vote 116 funding is allocated to HCIII level (Table 11).

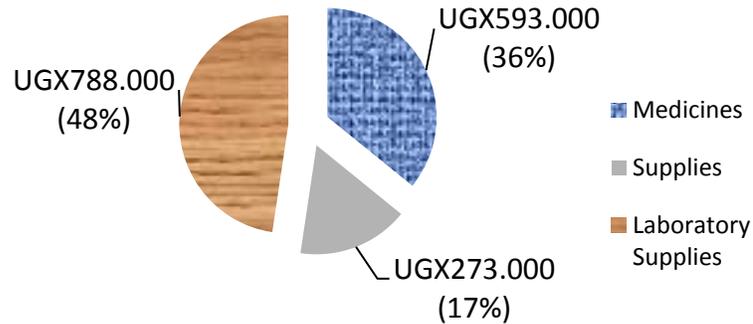
Table 11: Medicines, supplies, and laboratory supplies expenditure analysis for Tororo district 2009/10 procurement plan

HC level	Total EMHS + lab expenditures %	No. of facilities	Catchment population	Total EMHS + lab USD per capita expenditures	EMHS USD per capita expenditures ⁸⁶
HCII	18	30	184,440	0.76	0.76
HCIII	55	16	216,336	2.01	0.75
HCIV	27	1	578,696	0.75	0.71

⁸⁶ Calculated based on catchment numbers.

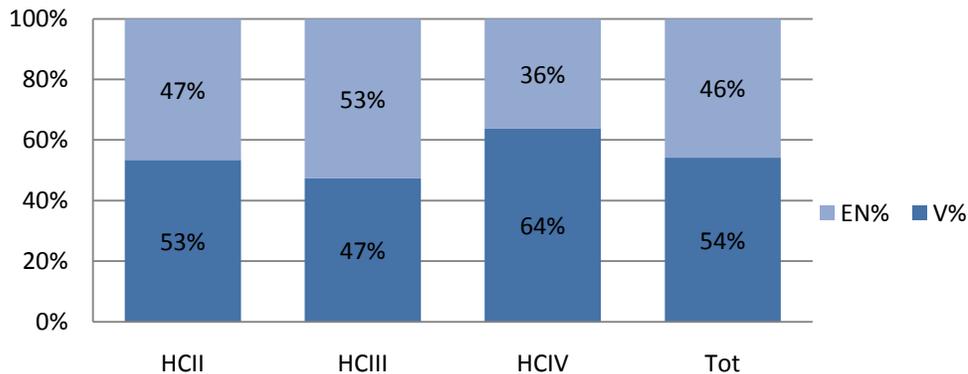
In Tororo, 53% (36%+17%) of the total health budget went to EMHS, (Figure 25). Looking only at spending for EMHS, 67% was spent on essential medicines. The distribution between medicines and supplies (excluding lab commodities procured through the lab vote) is about 70:30. The considerable amounts spent on supplies out of the Vote 116 indicates that supplies also be VEN classified.

Figure 25: Tororo budget for EMHS 2009/10 by commodities



Applying the proposed VEN classification to the medicines procurement budget in Tororo showed that about half of the funds are spent on V medicines and half on E/N medicines (Figure 26). Prioritizing procurement of only vital medicines would double the funding for V medicines and increase availability of V items. To increase availability of V medicines and supplies at facility level, it is necessary to build capacity at the facility level to apply the VEN concept when ordering. This will take time and will require all facilities to have available essential medicines and supplies lists that are classified according to the VEN concept. As can be seen from the analysis, the VEN concept must also be applied to laboratory supplies because almost half of the funds in Tororo was spent on laboratory supplies that are also often unavailable. A more robust analysis will be needed to see if the VEN classification can increase availability of all V items sufficiently. However it will beyond doubt increase availability of V items to some extent.

Figure 26: VEN analysis of Tororo procurement plan 2009/10 for medicines



Ensuring access to essential and necessary medicines and supplies

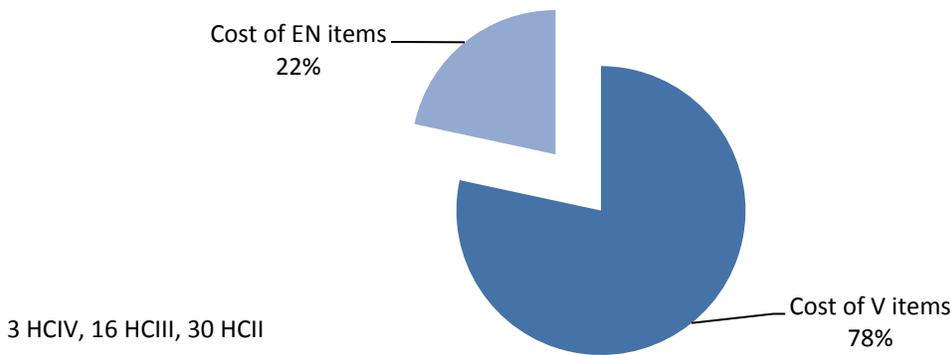
While insufficient financial resources in the public sector do help explain rampant stock outs, other obstacles also need to be overcome, such as inefficiency and waste. The introduction of the VEN strategy will increase availability of V medicines and supplies at all levels; however, the funding gap is so huge that it will be impossible to ensure full availability of all V, E, and N medicines and supplies.

Therefore, it is necessary to give priority to making lifesaving medicines and supplies available and free of charge and identify other mechanisms to ensure availability of good quality E and N medicines to patients at an affordable cost (i.e., through out-of-pocket payments).

Projected patient cost of essential and necessary medicines

To estimate the VEN distribution for medicines prescribed to outpatients, SURE carried out a prescription analysis. The study included 30 randomly sampled outpatient prescriptions from 30 HCII, 16 HCIII, and 3 HCIV facilities in Tororo district. Applying the VEN classification and using JMS sales prices, the analysis showed that 22% (14–34%) of the cost went to E and N medicines and 78% (66–86%) to V medicines (Figure 27).

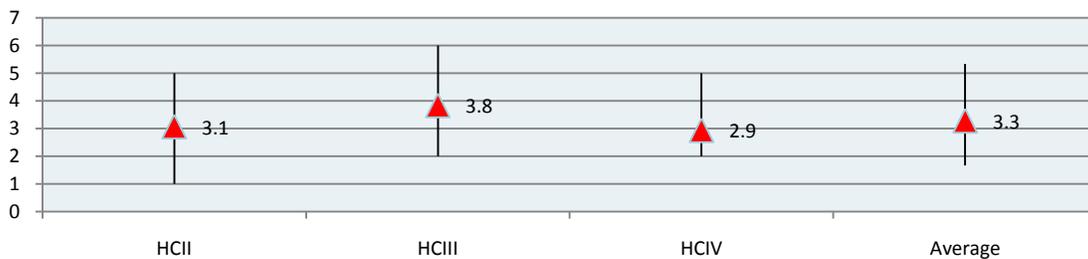
Figure 27: Total cost of essential medicines in Tororo district 2008/09 by VEN category



The limited prescription study differed from the budget analysis where 46% of medicines were E and N procured using Vote 116, but indicates that about one quarter of the medicines prescribed to outpatients were E and N medicines.

The study also found that on average outpatients are prescribed 3.3 medicines per visit (Figure 28).

Figure 28: Number of medicines per encounter by types of outlets



Based on JMS sale prices, the cost of each prescription was calculated and found to be approximately UGX 2500 or a little over USD 1 each. Adding a mark-up of 50%, the average prescription cost increases to approximately UGX 3600 or USD 1.70, which far exceeds the purchasing power of the majority of the population.

However, the prescriptions included treatment of malaria costed at JMS's prices (Figure 29). Currently, ACTs are funded outside of Vote 116 and provided free of charge to the health facilities. At the time of

the study, ACT availability was poor and many facilities used quinine, antibiotics, and sulfadoxine/pyrimethamine instead (Table 12). If not addressed poor prescribing can easily jeopardize the effects of all other initiatives to increase EHMS availability and strengthen the supply chain.

Figure 29: Prescription costs based on JMS prices including malaria treatment costs (UGX)

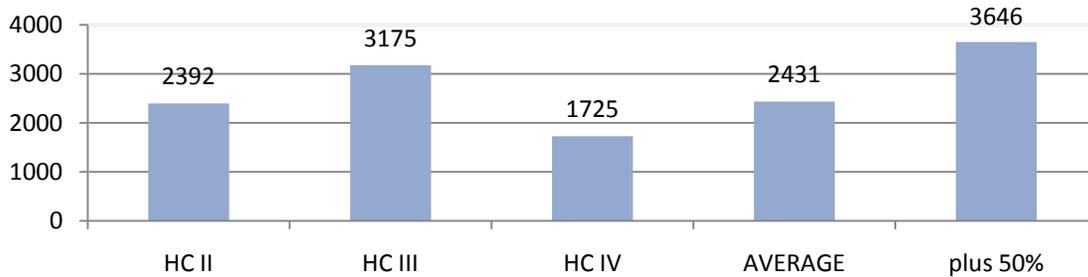
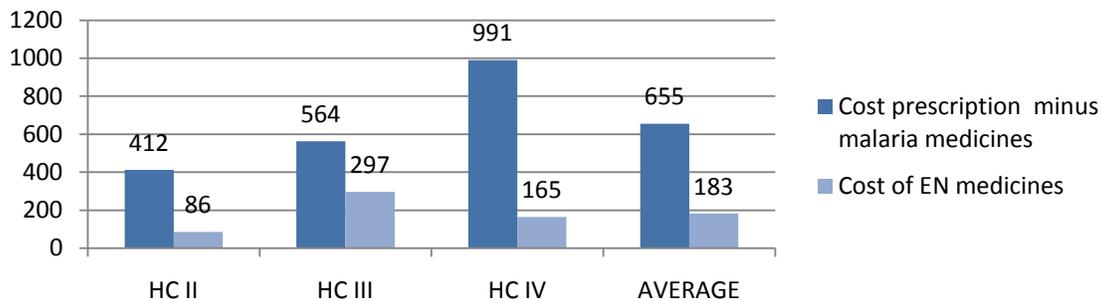


Table 12: Examples of the numbers of tablets/injections prescribed in three prescriptions for malaria treatment

Medicines	No1	No2	No3
Cotrimoxazole 480 mg tabs	5	5	5
Amoxicillin caps	10	5	
Albendazole	1		
Paracetamole	5	5	5
Quinine injection	3	3	3
Dextrose 5%	3	3	3
Pyrimethamine 25/sulfadoxine 500		1	1

Looking at the prescription cost if malaria treatment is not included (Figure 30), the cost for the full treatment is much more acceptable to most patients and especially if patient payment is only expected for E/N prescribed medicines.

Figure 30: Prescription costs based on JMS prices excl. malaria treatment costs (UGX)



Our analysis indicated that the cost of E and N medicines for outpatients would average about UGX 275 including a 50% mark up, and it also shows that if E and N medicines were purchased by the patient out of pocket, the available funds for V medicines would increase by 28% (183/655% from figure 30).

Selling medicines for a profit is known to result in polypharmacy. Prescribing and dispensing doctors were found to prescribe more medicines per patient, per encounter (2.3) than dispensing only doctors (1.7)⁸⁷ A similar pattern was seen comparing private wing prescribing to that of other public health facilities—3.3 versus 2.9. The findings from the analysis of the private wing prescriptions indicate increased costs for patients or society and an increased health hazard without clear benefit in private wings where medicines are sold at a profit.

4.3.2 Private wings

Recognizing the prevailing medicine out-of-stock situation in the public sector in Uganda, the current health policy has seen private wings as an avenue to raise additional funds to improve service quality, increase medicines availability, and to top up salaries for health workers. For paying out-of-pocket, patients in private wings receive faster service, private rooms with better ambience and food, and privileged access to a higher cadre of medical staff and other personal care services. A number of hospitals have established private wings attached to the public sector hospitals as “one of the means to bridge the gap in the funding needs in hospitals while taking into consideration the limited ability to pay for health services by the majority of the population, the willingness to pay for these services of those better off and the restricted capacities of public funds.”⁸⁸ In June 2008, the MoH drafted guidelines for managing private wings, including setting minimum requirements for the private wing systems, structures, processes, and expectations.⁸⁹ The two-tier billing system (general and private wing) is applied in many countries and is now implemented in several hospitals throughout Uganda.

SURE assessed five private wings hospitals as part of the POA. The assessment found that the private wings in public hospitals are viewed as extensions of the hospital where clients could get faster services at a fee. Guidelines for the operation of private wings were not available at the private wing hospitals, although they appear in hospital budgets as an income-generating activity. The income generated also provides hospital management additional discretionary funds to be able to motivate staff and make some infrastructure improvements.

The type of services offered and fees charged varies. However, all private wings had inpatient service with between 8 and 34 beds and 86% also service outpatients. While medicines for private wings are purchased outside of Vote 116, 60% of the hospitals obtained some medicines through public sector supplies (general pool). Salary top-up varied considerably within the different professional cadres and between the wings from UGX 20,000 to UGX 1,500,000/month.

The fee system was not unified and charges varied as shown in Table 13.

Table 13: Variation in fees charged by private wings in Uganda (UGX)

Fees	Average	Minimum	Maximum
Outpatient department consultation	4,000	3,000	5,000
Ward per day (inpatients)	4,667	1,500	10,000
Minor operation	25,000	10,000	50,000
Major operation	88,333	30,000	135,000

⁸⁷ Trap, B., Hansen, E.H., Hogerzeil, H.V. Prescription habits of dispensing and non-dispensing doctors in Zimbabwe. *Health Policy & Planning*. (June 2002).

⁸⁸ Guidelines for Management of Private Wings of Hospitals Draft 1, June 2008, MoH, GoU.

⁸⁹ Ibid.

4.3.3 Public sector cash and carry pharmacies—an alternative to private wings?

While private wings have helped assure availability of EMHS in public sector facilities, it is only accessible to some of the patient population and at a cost similar to that in the private sector. Though trained service providers were engaged at the private wings, the services varied greatly; for example, not all had pharmacies to serve outpatients and the cost of the services and medicines varied dramatically. Moreover, to ensure high availability and presumably to also increase profits, supplies meant for the public sector wing were used in the private wing, which further decreased availability in the sector serving the poorer population. While implementation of the MoH drafted guidelines for private wings will rectify these inequities to some extent, the poorest part of the population will still be unable to afford the services from either the private wing or the private sector.

A proposed alternative system of public cash-and-carry pharmacies (PCCP) could be based on procurement of supplies from JMS (where prices are cheapest) and sales of the medicines at an agreed mark-up. This mark-up would be similar to the private wings by allowing the facilities to replenish their supplies and even make a surplus that it could use for improvements (e.g., maintenance, salary top-up) as agreed with the community. The PCCP would take the good from the private wing initiative, but extend services to lower levels of care including HCII, III, and IV. Medicine costs would be regulated and apply only to E/N medicines because V medicines would still be available free of charge. Moreover, the PCCP initiative plus the accreditation of public sector pharmacies that is part of the new MoH/SURE strategy would increase the quality of services and products in the public sector. In addition, the PCCP has the potential to increase pharmaceutical availability and access to lifesaving commodities, increase staff motivation, strengthen the referral system, and decrease illegal drug sellers. On the other hand, PCCP success would shift patients back to the public sector and thereby increase the workload and the demand for medicines. This would put further stress on an already weak medicines budget.

Therefore, it will be critical to further develop the PCCP concept, building on the past experience with cost recovery schemes in Uganda and other countries with emphasis on community involvement, no exemptions, accountability, and transparency guided by good governance and with the assistance of advisors with global financial and cost-recovery expertise.

Clearly, supplying free drugs through the public sector will have to be supplemented by ensuring improved access to affordable medicines in the private sector or through a public-private sector mix. Whatever system is eventually adopted needs to ensure that access is equitable and that the poor are not marginalized.

4.4 Medicine pricing

4.4.1 NMS/JMS prices

Compared to the international reference price, the prices of essential medicines in 2004 cost less in both NMS (85%) and JMS (72%).⁹⁰ This implies that both agencies were able to competitively procure drugs using pooled procurement and large volume procurement. Ensuring good procurement pricing is fundamental to the optimal use of limited funds.

⁹⁰ WHO/HAL. (World Health Organization/Health Action International). Government of Uganda, Uganda Medicine Pricing Survey Report April 2004 (Kampala: 2004).

Though prices are competitive at NMS, availability has been a continual problem. The frequent stock outs result in low order fills of and between 40% and 60%.⁹¹ When orders are not filled and medicines are not available at the public health facilities, patients will need to obtain the medicines elsewhere at their own cost. Data from Uganda's 2003 household expenditure study showed that more than 45% of people's health spending was on medicines. Only 65% of people who sought care in public health centers were able to obtain their prescribed medicines—the others paid for all or part of their prescriptions out-of-pocket, indicating that some drugs were not available and some drugs were not actually free of charge.⁹²

4.4.2 Medicine prices in the private sector

The most recent information available on pricing in Uganda comes from the WHO/Health Action International medicine pricing survey of 45 medicines in nongovernmental facilities (primarily rural) and retail pharmacies (primarily urban).⁹³ The assessment compares medicine prices to international reference prices and creates a median price ratio, which is the ratio of the local price divided by an international reference price. A median price ratio of 2.0 means that the price is twice the international reference price. The 2004 pricing survey revealed that market prices can be two to three times the manufacturers' and/or importers' selling price (international reference prices).

For example, at private retail pharmacies, the median price ratio that patients paid for the lowest priced generics was 2.6 compared to the international reference price (range 0.28–16.1). For innovator brands, the price was to 13.6 times the international reference price (range 1.68–118.0). In the NGO sector, the median price ratio for the lowest priced generics was 2.7 compared with the international reference price, with a range of 0.53 to 12.34. In both the retail pharmacies and the NGO facilities, the prices that patients paid for medicines varied widely. However, the patient prices in the private sector were the same as those in the NGO sector.

The report noted that NGO facilities, which are generally located in rural areas, are charging the same as urban-centered private pharmacies, despite being subsidized by the government through primary health care grants and a credit line as mentioned previously. In addition, the report noted that drug shops are also important medicine dispensers in rural areas, and that an evaluation of their actual and potential role in the supply of medicines was an information gap.⁹⁴ A 2006 update of the report noted that in a review of 73 public, private, and mission facilities, there were still no differences in medicine prices between private urban and private rural facilities, nor were there significant differences in prices in the mission sector compared with the private sector. Mission sector prices were about 11% higher overall in urban areas compared with rural areas.⁹⁵

In SURE's analysis of private wings, the cost of medicines and the modality of payment varied. In half of the facilities, medicine cost was a flat fee between UGX 3,000–5,000, and only in one of the five

⁹¹ Peter Okwero et al. World Bank Working Paper No. 186. Africa Human Development Series. Fiscal Space for Health in Uganda. World Bank 2010.

⁹² Management Sciences for Health. The East African Sellers Initiative. Situational Analysis for the Pharmaceutical Sector and Access to Medicines in Uganda. November 2008.

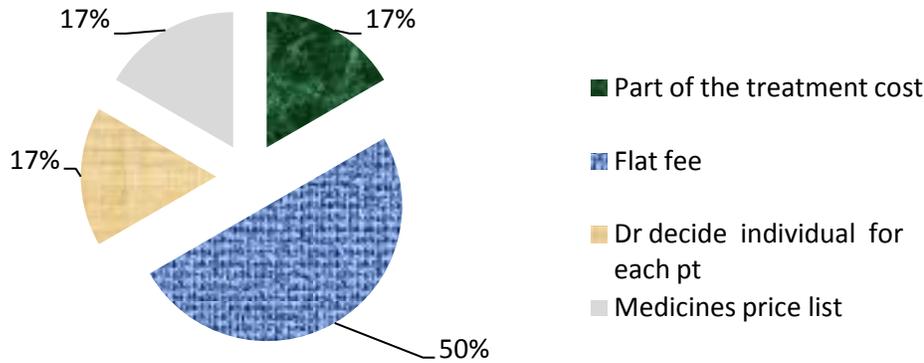
⁹³ WHO/HAI. (World Health Organization/Health Action International). Government of Uganda, Uganda Medicine Pricing Survey Report April 2004 (Kampala: 2004).

⁹⁴ WHO/HAI. (World Health Organization/Health Action International). Government of Uganda, Uganda Medicine Pricing Survey Report April 2004 (Kampala: 2004).

⁹⁵ HAI (Health Action International). 2006. Medicine Price Monitor: Uganda. <http://www.haiweb.org/medicineprices/medprices29112007/UgandaOctDec2006.pdf>.

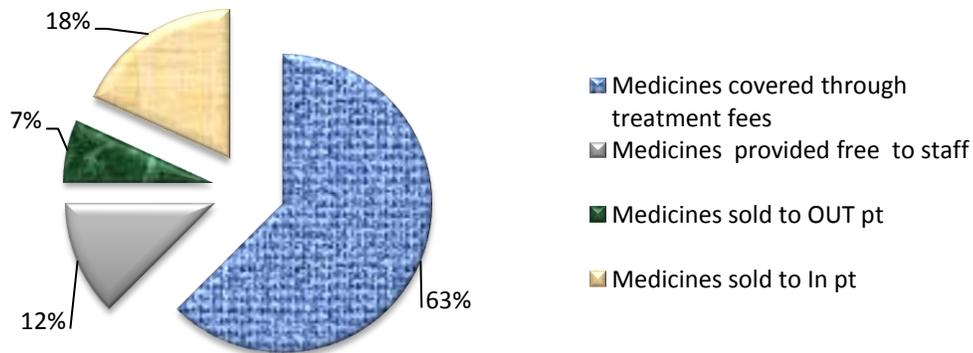
hospitals systematized charges in accordance to a price list (Figure 31). It is highly unlikely that patients are charged the same at the different wings and equity in costs for private wings is not assured.

Figure 31: Medicine pricing for outpatient at five private wing hospitals 2010



In most private wings, the accounting system did not allow for in-depth analysis of medicine expenditures. In Mbale private wing, most of the medicines were covered as part of a treatment fee for inpatients (Figure 32).

Figure 32: Medicine expenditures Mbale private wing 2010



Up to 15% of private wing services were consumed by staff and their relatives who are exempted from payment. In one mission hospital, 5.6% of the total fee collected (medicines and other fees) was provided free to staff compared to 12% of medicines charges in the public sector private wings that was provided free to staff. In addition, almost half of the medicines sold to patients through the private wing pharmacy was dispensed free of charge to staff or their relatives.

4.4.3 Price survey

To update price information related to the NMS, JMS, and the private sector and to assess prices in the private wings established in public sector hospitals, SURE conducted a smaller pricing survey as part of the policy option analysis.

Fifty-one essential medicines and health supplies (Annex 5.2) that were subject to equal quality standards (pharmacopoeia standards or similar) were selected. Of these, 42 were classified as vital and essential while 9 were supply items. The items were primarily selected from the NMS order form (HMIS 018) and were included in the Essential Medicines List of Uganda.

Prices were randomly selected from three regions of the country: central, east, and west. Prices on the products were obtained from 20 pharmacies, 3 private wings in public sector hospitals, 6 private wings in private not-for-profit hospitals, 3 drug shops, and 3 wholesalers. SURE compared prices for the lowest generic products. All prices were calculated in Uganda shillings per unit (tablet, capsule, ampoule, vial, etc.) (Table 14).

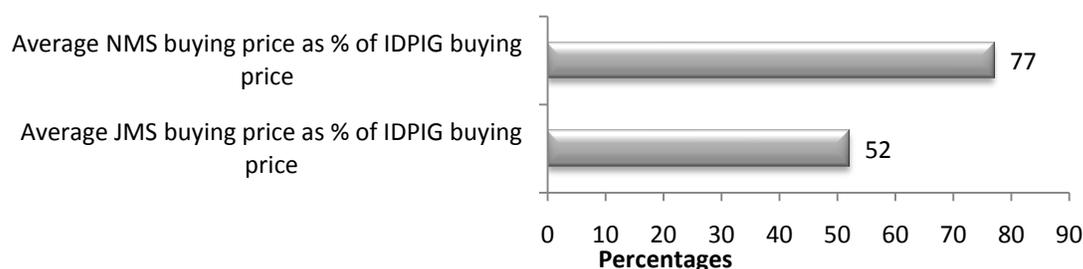
Table 14: Price of a basket of 51 lowest generic EMHS compared to JMS selling price (UGX)

Private wing (public sector)	Private sector	NGO facility
5 times greater (range: 1–18)	3.8 times greater (range: 1–16)	2.4 times greater (range 0.7–9.0)

JMS and NMS buying and selling prices were compared to international prices as indicated in the *International Drug Price Indicator Guide* (MSH, 2008), which compiles suppliers’ and buyers’ prices. International median buyer prices (including cost insurance and freight) were used as reference for comparison. NMS selling prices were adjusted for distribution costs to make the comparison fair with JMS.

On average, NMS obtained the selected items at 77% of the international reference prices, while JMS secured better purchase prices, averaging 52% of the international reference price, 32% cheaper than the NMS buying price (Figure 33). Our findings confirm 2004 study findings where both NMS and JMS procured below the international reference price and JMS obtained lower prices compared to NMS: 72% versus 85% in 2004⁹⁶ compared to 52% vs. 77% in the SURE 2010 survey.

Figure 33: Comparison of JMS and NMS average buying prices with *International Drug Price Indicator Guide* reference prices

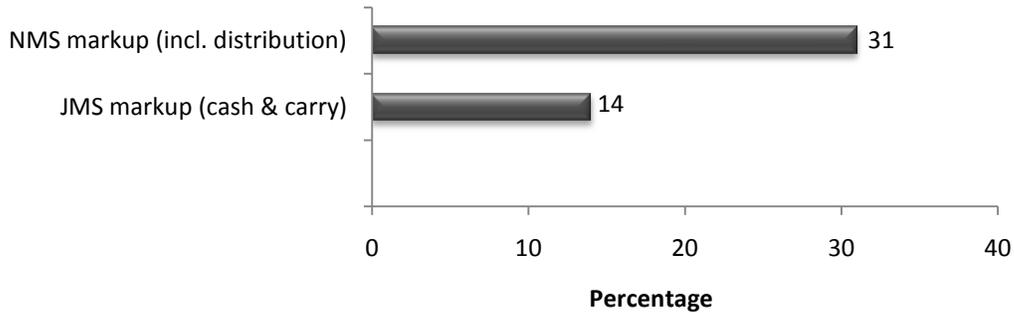


From the findings, even with Vote 116, the National Medical Stores are still operating with a mark-up of 31%, which includes distribution costs of 9% (Figure 34). This compares to the maximum of 18% official

⁹⁶ WHO/HAI. (World Health Organization/Health Action International). Government of Uganda, Uganda Medicine Pricing Survey Report April 2004 (Kampala: 2004).

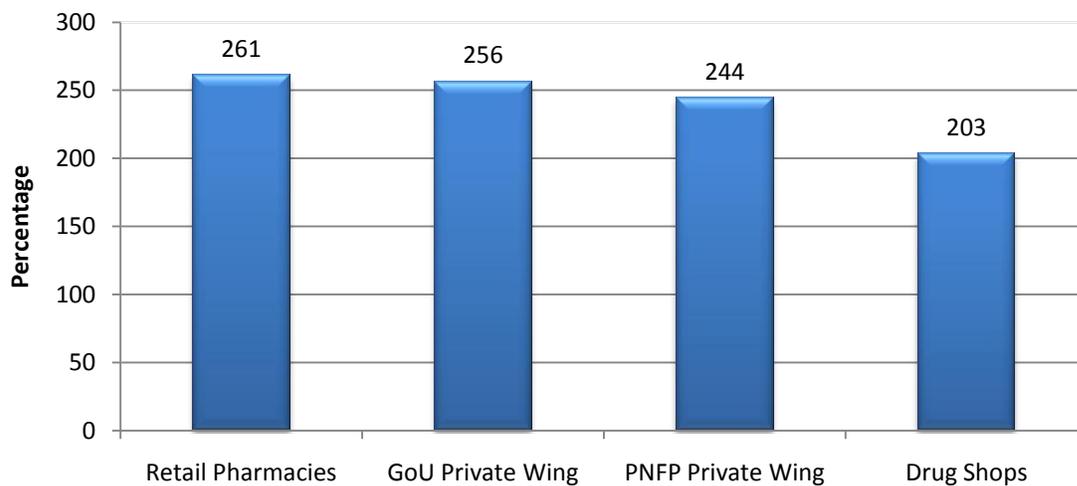
NMS mark-up charged for the services offered, and more than the JMS mark-up of 14%. Excluding distribution costs, the JMS mark-up is still 36% less than the NMS mark-up (14% versus 22%). This probably explains JMS’s lower selling prices; however, both NMS and JMS selling prices were competitive when compared to other local wholesalers in the market. On average, their prices were 10 to 20% less than the local wholesalers.

Figure 34: Average percent mark-up for NMS and JMS



Using JMS’s selling prices as the reference, retail pharmacies had the highest mark-ups, averaging over 260% with a range of 10–300% (Figure 35). This indicates limited regulation and price control within the private sector, which affects the final price to consumers. The survey showed that not only are private wing prices similar to the lowest generic product prices in the private sector, but also that up the distribution chain, prices more than doubled from 100 at JMS to above 260 in retail pharmacies (Figure 36).

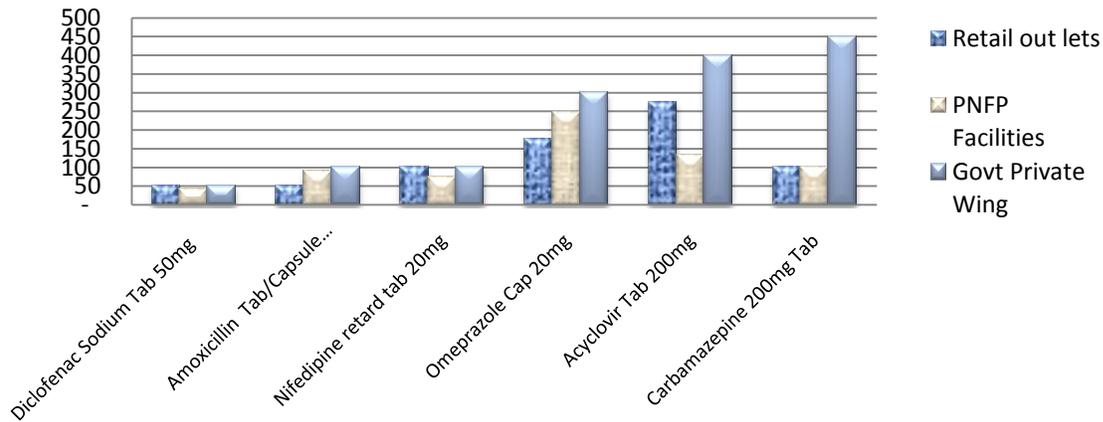
Figure 35: Percentage price mark-up by sector from JMS selling price





Clearly retail prices are high in all sectors and bear no relationship with wholesale prices. Such uncontrolled prices may be one of the barriers to access of essential medicines as Figure 37 illustrates below.

Figure 37: Median prices for basic units of selected items in different types of outlets (UGX)



In summary, the public, not-for-profit, and private sectors all play a major role in providing the public with medicines. Both NMS and JMS procure supplies below international prices. Although the mark-up for public sector private wings is above 250%, the consumer price is still in the same range as the private sector due to the lower procurement price. However, the prices of medicines in private wings and in private not-for-profit facilities still put them out of reach of most of the population.

4.4 NMS financial and business performance

Several studies and reviews of NMS⁹⁷ have highlighted challenges and constraints that affect the organization’s effective performance. NMS is restructured under new management and has made commitments to addressing gaps and to a zero policy on corruption. Internal reforms include a new priority product list of 256 items, a revised operational manual, and a pricing survey to revisit overpriced items.⁹⁸ SCMS has supported the establishment of a supply chain and financial management information technology system (MACS/SAGE) that was aimed at providing accurate and updated information that is meant to enable NMS to take timely and appropriate actions and decrease out-of-stock situations. In

⁹⁷ Including the NMS Task Force Report, 2008; Assessment of Warehouses, Distribution and Management Information at NMS for Operational and Physical Enhancement, Supply Chain Management System (SCMS), October 2007- funded by USAID.

⁹⁸ National Medical Stores. Progress Report- July- December 2009.

addition, because NMS has a history of chronic mismanagement and corruption, oversight and accountability mechanisms need to be put in place to minimize leakage. To better manage NMS performance, the MoH Pharmacy Division is developing performance indicators and setting targets that can form part of a memorandum of understanding between MoH and NMS.

Many other initiatives are ongoing to increase NMS effectiveness and efficiency. As mentioned, NMS has started planning for the reintroduction of kit-based supply system for HCII and III to simplify distribution. However, the kit contents will affect medicine expiry is yet to be established. NMS will develop a list of essential drugs and items that must be at each HCII and III including antimalarials, contraceptives, and mama kits. NMS intends to pilot delivery of drugs to the lower level sub-district health centers, unlike the current policy of delivery to the district level.

The government's recent decision to centralize the PHC vote to Vote 116 will substantially increase the volume of products NMS will handle, including all referral hospitals and army facilities. While this decision has been met with concern by various stakeholders, it could ideally minimize the loopholes for leakage. For the first time, the government will be able to specify how much is actually going to the purchase of EHMS.⁹⁹ Following the centralization of these funds, NMS introduced facility budgets. While it will take time to fine-tune the allocations to specific district and health sub-district needs, the arrangement will strengthen transparency and financial management.

To improve information exchange and planning, NMS is planning to launch a website with up-to date information of stock status, orders, and deliveries and where on-line ordering can become a reality. NMS has recently strengthened their equipment and facilities and are now considering introducing night shifts to better cope with the increased workload and make better use of the equipment and existing capacity.¹⁰⁰

After a series of turbulent phases in its first decade, NMS has seen positive developments in management and operations, including changes in senior management and in software systems (i.e., Navision software has been superseded by SAGE for finance and MACS for warehouse management). The sections below outline remaining problems with procurement, storage, distribution, and space. However, the major constraints relate to finances.

4.4.1 NMS financial indicators

Developments in recent years have placed the NMS in a deficit situation. As originally constituted, NMS was primarily a trading firm that was capable of determining both expenditure and income. For a number of years, however, Danida provided financial support. In 2007/08, for example, NMS recorded a pre-tax profit of UGX 3.5 billion because Danida supplied a grant of UGX 3.7 billion that year.

With the Vote 116 legislation, NMS lost its trading function. It would procure medicines and other supplies to meet the needs of the districts, but payment to suppliers would be made by the Ministry of Finance through the Bank of Uganda, without funds passing through NMS. NMS would, however, be able to charge a 18% handling fee to cover operational costs.¹⁰¹ NMS also earns handling fees from third

⁹⁹ Andy O'Connell. DFID. Building a Joint Response to corruption in Uganda, Focus on Drug Management. Draft for initial discussion. Core script 31 March 2010.

¹⁰⁰ Global Emergency Group. Health Commodities Supply Chain Assessment in Karamoja Region Uganda, 28 January 2010.

¹⁰¹ It is notable that NMS charges facilities a mark-up of 31% on the price at which the goods have been procured, thus effectively reducing a facility's budget by the same percentage .

parties for storing and delivering goods; these fees are lower than the 18% paid by the Ministry of Health, due to the lesser services being provided, but also because of the donors' negotiating capabilities. For example, CDC receives full service yet it pays 15%. NMS has further reduced its mark-up on Vote 116 items to 10%, based on the premise that the income generated from handling fees from donor-funded items would buffer the income to cover operational costs and even provide a surplus. This could be a viable approach in the short term, but in the longer term, NMS has the risk of financial vulnerability should donor funding suddenly cease. Termination of Danida support in 2008/09 has NMS operating at a considerable deficit (UGX 1.3 billion in FY 2008/09) (Table 15).

Table 15: NMS income statements for FY 2005–2009

UGX 1000's	2005/06	2006/07	2007/08	2008/09
Income				
Sales	16,277,628	15,876,170	17,117,050	19,136,045
Cost of Sales	(12,586,148)	(11,370,383)	(12,356,578)	(14,560,388)
Gross profit	3,691,480	4,505,787	4,760,472	4,575,657
Other Income	3,826,200	6,561,448	7,558,412	5,087,659
Total Gross Profit	7,517,680	11,067,235	12,318,884	9,663,316
Expenditure				
Unreconciled difference in stocks written off	(110,489)	2,425,043	71,377	-
Provision for expired stocks	202,909	532,618	1,193,872	89,169
Provision for bad debt	1,735,217	121,510	1,452,985	1,222,397
Personnel costs	2,610,353	2,896,148	2,888,331	3,332,321
Other Operational expenses	3,970,353	6,293,669	6,911,951	6,333,834
Total expenses	8,408,343	12,268,988	12,518,516	10,977,721
Loss from Operations before grant income and taxation	(890,663)	(1,201,753)	(199,632)	(1,314,465)
	\$ (445,331.50)	\$ (600,876.50)	\$ (99,816.00)	\$ (657,232.50)
Grant Income	937,410	1,716,327	3,720,900	-
(Loss)/Profit before Taxation	46,747	514,574	3,512,268	(1,314,405)
Taxation	-	(2,260,720)	(501,767)	88,405
(Loss)/Profit for the year after taxation	46,747	(1,746,146)	3,019,501	(1,226,000)
	\$ 23,373.50	\$ (873,073.00)	\$ 1,509,750.50	\$ (613,000.00)

Source: Data from NMS financial statements, FY 2005/06, 2006/07, 2007/08, 2008/09

Analysis of key financial ratios indicate how well a business is operating financially. The ratios can show how many times stock is turned in the warehouse, how well management uses assets to generate profit, and how well the business could clear liabilities. Table 16 is a summary of how NMS is operating against key financial performance ratios followed by an explanation of the calculations.

Table 16: Analysis of business operations

Ratio	2006/07	2007/08	2008/09	2009/10	Norm
Stock turn	1.3*	1.2	1.3	0.7	3–4
Quick ratio	1.8	0.9	1.2	1.7	>1
Current ratio	5.3	2.3	2.7	3.0	>1
Return on assets	-3%	-1%	-3%	N/A	>0
Asset turn over	0.6	0.7	0.6	0.3	>1
Collection days	230	215	224	284	30
Supplier payment days	230	180	135	85	30
Gross margin	49%	49%	40%	40%	Profit
Net margin	-11%	-1.1%	-5.4%	N/A	Profit

*Red indicates where NMS is outside the norm as determined by internationally accepted good business practice for the ratio shown

NMS Business Ratios

The **Inventory turnover** measures the number of times inventory is sold or used in a defined time period. It is also known as **inventory turns, stock turn, stock turns, turns, and stock turnover**.

A low **stock turnover** rate may result from overstocking, obsolescence, or deficiencies in the product line or marketing effort. However, in some instances a low rate may be appropriate, such as where higher inventory levels occur in anticipation of rapidly rising prices or shortages. A high turnover rate may indicate inadequate inventory levels, which may lead to a loss in business. An item whose inventory is sold (turns over) once a year has higher holding cost than one that turns over twice, or three times, or more in that time. Stock turnover also indicates the briskness of the business. The purpose of increasing inventory turns is to reduce inventory. This leads to decrease in holding costs; this means that the central medical store or wholesaler spends less money on rent, utilities, insurance, theft and other costs of maintaining a stock of good to be sold. In for-profit operations, the holding cost reduction increased net income and profitability if revenue from sales remains constant. A faster turnover also allows the operation to more quickly adjust to changing requirements (for example, changes in the medicines list) without risk of losses from obsolescence. On the other hand, in some cases high turnover rate may indicate that the inventory is too low and lead to stock shortages.

The **current ratio** measures whether or not a firm has enough resources to pay its debts over the next 12 months. It compares a firm's current assets to its current liabilities. Because the ratio is calculated by dividing NMS's assets by its liabilities, the resulting ratio is usually considered to be acceptable to be acceptable if current assets are twice the current liabilities. Data from NMS' public financial statements show a significant reduction of the current ratio in the past three years compared to that of FY 2006/07. If NMS's current ratio is below 1, then it would have difficulty in paying its suppliers. If it is too high, then NMS may not be efficiently using its current assets or its short-term financing facilities. This may also indicate problems in working capital management.

Low values, however, do not indicate a critical problem. If an organization has good long-term prospects, it may be able to borrow against those prospects to meet current obligations. Some types of businesses usually operate with a current ratio less than one. For example, if inventory turns over much more rapidly than the accounts payable become due, then the current ratio will be less than one (this is

true for McDonalds). This can allow a firm to operate with a low current ratio. However, this is not the case for NMS which has a very low turnover ratio.

If all other things were equal, a creditor, who is expecting to be paid in the next 12 months, would consider a high current ratio to be better than a low current ratio, because a high current ratio means that the company is more likely to meet its liabilities which fall due in the next 12 months.

The **quick ratio**, also known as the Acid-Test ratio, measures the ability of NMS to use its near cash or quick assets to immediately extinguish or retire its current liabilities. Quick assets include those current assets that presumably can be quickly converted to cash at close to their book values. A company with a Quick Ratio of less than 1 cannot currently pay back their current liabilities. Generally, the acid test ratio should be 1:1 or better, and the higher the ratio, the greater the company's liquidity (i.e., the better able to meet current obligations using liquid assets).

The **asset turnover ratio** compares the turnover with the assets that the business used to generate that turnover. For the past three financial statements, the data show that for every UGX 1000 of assets, NMS only produced UGX 600 from FY2006/07 to FY2008/09, which decreased to only half that in FY2009/10.

The debtor payment collection days and NMS payment to supplier days indicate how long it takes NMS to get paid (by its debtors) or to pay its (creditors or suppliers). Data from the financial statements show that, while time it takes NMS to collect payments has increased, the time for NMS to pay its suppliers has decreased. This will be a grave problem for NMS it cannot recover sufficient funds to offset its financial obligations. The trend is not encouraging.

The **gross margin, gross profit margin or gross The profit rate** is the difference between the sales and the production costs excluding overhead, payroll, taxation, and interest payments. Gross margin can be defined as the amount of contribution to the business enterprise, after paying for direct-fixed and direct-variable unit costs, required to cover overheads (fixed commitments) and provide a buffer for unknown items. It expresses the relationship between gross profit and sales revenue. It is a measure of how well each dollar of a company's revenue is utilized to cover the costs of goods sold,

The **profit margin, net margin, net profit margin or net profit ratio** all refer to a measure of profitability. It is calculated by finding the net profit as a percentage of the revenue. The profit margin is mostly used for internal comparison. It is difficult to accurately compare the net profit ratio for different entities. Individual businesses' operating and financing arrangements vary so much that different entities are bound to have different levels of expenditure, so that comparison of one with another can have little meaning. A low profit margin indicates a low margin of safety: higher risk that a decline in sales will erase profits and result in a net loss.

The profit margin is an indicator of a company's pricing strategies and how well it controls costs. The profit margin is frequently confused with markup.

The ratios were calculated as follows—

Stock Turn:

Cost of goods sold

Average inventory value (opening stock + closing stock)/2

This ratio shows how many times a business turns its stock or converts its inventory into cash. The technically accepted level is 3 to 4 times a year, which allows a company to keep stock fresh and keeps cash-flow healthy.

NMS's low stock turnover rate increases the risk of expiry and redundancy. Also, high stock levels increase the costs of storage and handling and tie up valuable cash in unmoving stock, creating a loss in financial opportunity (the amount of money that could have been earned if the cash used for stock was actually invested).

Quick Ratio:

Current assets – Inventory
Current liabilities

The quick test ratio (also called the *acid test* or *liquidity ratio*) is the most robust test of a company's financial strength and liquidity. This ratio indicates the value of items that can be converted into cash immediately.

NMS has a quick ratio of 1.7:1 which indicates a lot of liquid assets (mainly cash) 1.7 times that of its liabilities.

Current Ratio:

Total current assets
Total current liabilities

This calculation determines how many UGX in assets are likely to be converted to cash within one year to pay debts that come due during the same year.

NMS has a high ratio of 3:1 for the current year, which indicates they have UGX 3 for every UGX 1 they owe. This is mainly due to the fact that they have UGX 10 billion in their current account (source year to date—28th February 2010, accounts data from SAGE system).

Asset Turnover:

Income
Total assets

The asset turnover ratio calculates the total income generated for every UGX of assets a company owns. NMS has a ratio of 0.3:1, which means that it is essentially experiencing a loss because it should be making at least UGX 1 per UGX 1 of assets; NMS is 70% under this figure. This could mean that NMS has too many assets or that management is not using them effectively enough to generate income.

Collection Days:

Debtors x 365 days
Turnover

This should ideally be 30 days, but NMS suffers from long payment times from the government.

Supplier Payment Days:

Creditors x 365 days
Purchases

Ideally this should be the same or longer than it takes to receive payment from customers to achieve positive cash flow, so over 30 days and up to 60 days, if it can be negotiated with suppliers. NMS have improved the days taken to pay suppliers over the past 4 years. This is so because of better management of payments and the introduction of Vote 116.

Gross Margin:

$$\frac{\text{Income} - \text{Cost of goods sold}}{\text{Income}} \times 100\%$$

This shows the amount of money a company has to cover its operational costs. The higher the percentage the better. NMS is operating at around 40% for its gross margin which is within normal operating parameters.

Net Margin:

$$\frac{\text{Net profit}}{\text{Income}} \times 100\%$$

Net profit = Income – Cost of goods sold – Operating expenses – Interest and taxes

This ratio shows how much of each UGX earned by the company is translated into profits. In the case of NMS, net margins indicate a loss, showing that gross profit does not cover all operating costs

4.4.2 Indicator comparisons by country and industry

It is very important to put all the NMS ratios into context, which requires comparing the ratios with other businesses operating in the same country in the same sector. The following comparison graph compares NMS performance with JMS. All data for JMS came from their 2008/09 annual report.

JMS stock turn is around 3.75 which allows it to keep stock fresh and have regular income from inventory (Figure 38). Also, JMS can change its product mix more easily if the market changes. For the current ratio, both organizations seem to have enough assets to cover liabilities (Figure 39).

Figure 38: Stock turnover rate comparison of NMS and JMS

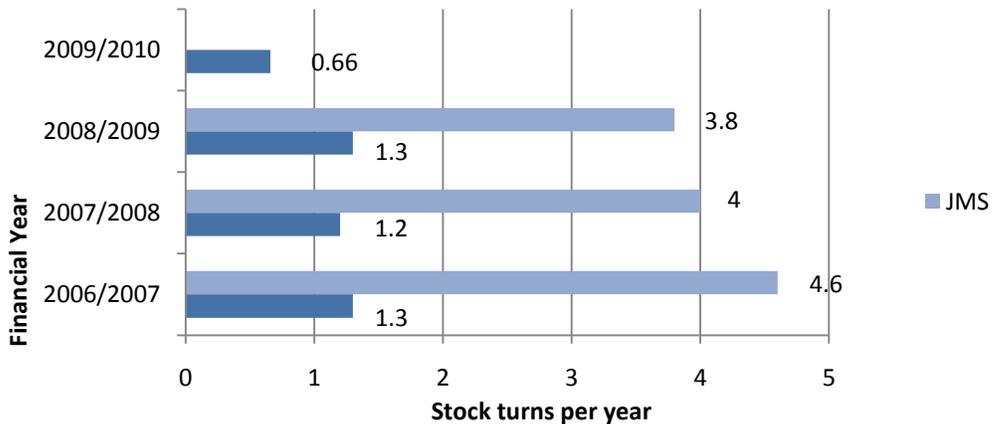
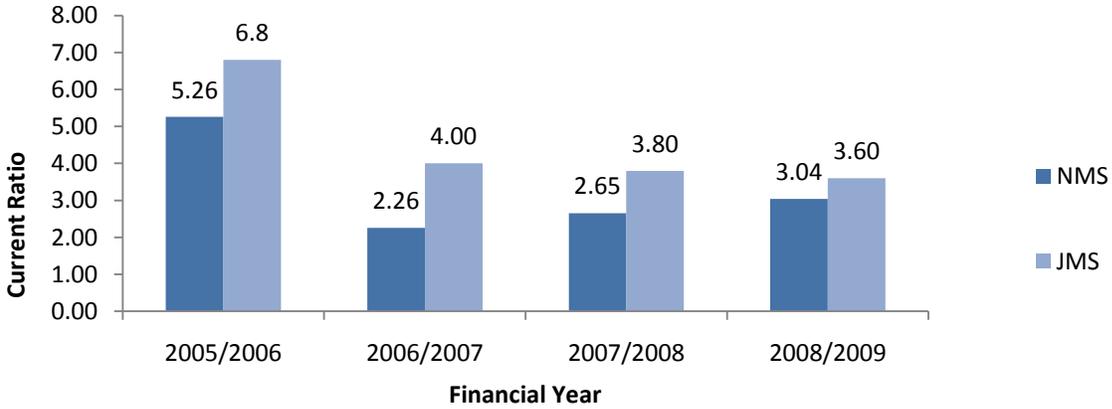


Figure 39: Current ratio comparison of NMS and JMS



Figures 40 and 41 show that JMS is operating within normal business parameters although it is taking 40 days to collect debts from customers; it takes 60 days to pay suppliers, which produces positive cash flow. NMS unfortunately took 224 days to collect and 130 days to pay in 2008/09.

Figure 40: Customer collection days comparison of NMS and JMS

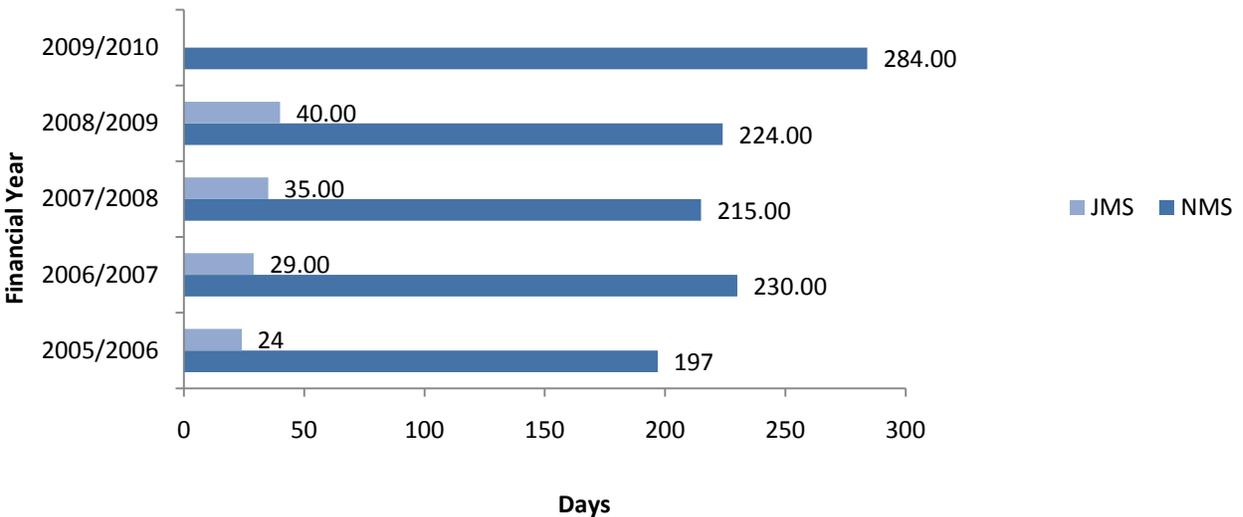


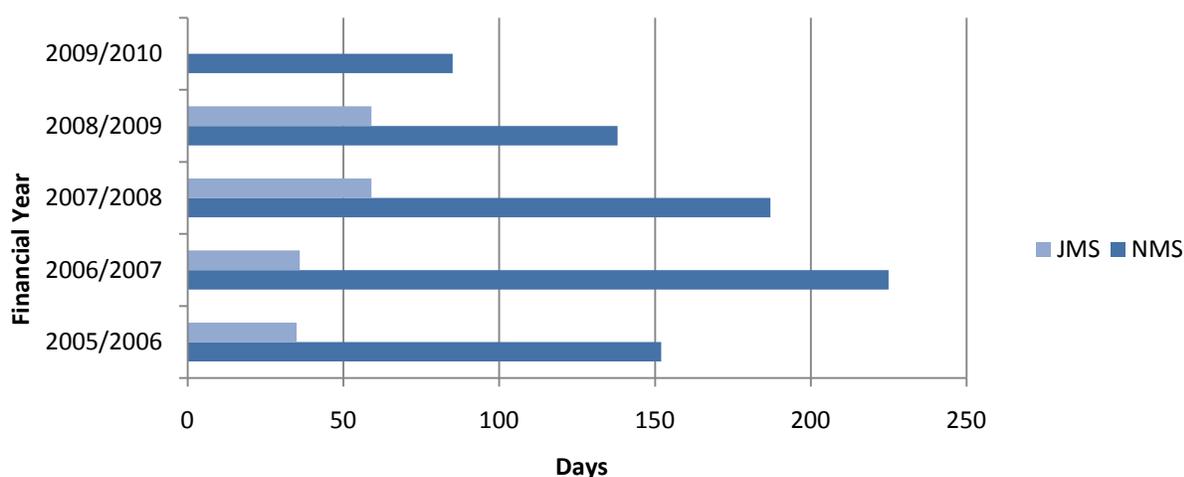
Figure 41: Supplier payment comparison of NMS and JMS

Figure 41 shows that JMS probably used good negotiation to pay suppliers in 60 days (2008/09), which is better than NMS's 85 days by NMS (2009/10). NMS performance is improving but still some way from the 30 day payment terms stated in the procurement contracts.

4.4.3 NMS income and fees

Previously NMS would sell products to the health facilities at cost plus a mark-up. However, due to Vote 116 this is no longer possible; NMS now is a third-party logistics provider and provides procurement storage and distribution services for the Ministry of Finance. When NMS delivers stock to a District Health Office for a specific health facility, they no longer receive any cash payment from the facility. The facility's purchasing budget is debited by the amount of medicines supplied. Therefore, this is a paper exercise to ensure that each facility knows the level of budget it still has to spend. NMS now gets its income from handling fees based on services provided and can no longer influence income by increasing or decreasing mark-ups on products supplied to the facilities.

Turnover from handling fee:

Using the income statement and annual report for 2008/09 income distributed on clients could be calculated to: Third Party 49%; MoH 36%; CDC 15% of turnover from handling fees. Thus third party provides are responsible for half of the income in the form of handling fees.

Table 17 shows the amount of income from each income stream; this income is divided by the percentage of the handling fee to equal the value of stock managed by NMS. However, because third-party income is a mixture of percentages (Table 18), the calculation used a weighted average of 7.5%. In addition, MoH pays 7.5% for ARVs and malaria products and 18% for EMHS; for the purpose of this analysis, we used the higher percentage to show the best-case scenario.

Table 17: NMS third-party handling fees

	CDC	MoH	Third-party average
% Fee	15.0%	18.0%	7.5%
Income (UGX)	1,280,722,684	2,996,709,973	4,129,939,361
Stock value (UGX)	8,538,151,227	16,648,388,741	55,065,858,140

Table 18: Third-party handling fees

Third Party Client	Handling Fee %
Clinton HIV/AIDS Initiative	8
United Nations Family Planning Association	10
Supply Chain Management System	7
AIDS Control Programme	7
Uganda National Malaria Control Programme	7
Diflucan® donation	7
Neglected Tropical Diseases/UNICEF	10
JSI/Injection Safety	10
Uganda Global Fund	7.5

Source: Data from NMS Finance Department

The analysis attempts to estimate how NMS will fare under Vote 116 with only handling fees as income. Using 2008/09 operating costs, we carried out “what if” scenario calculations. In Table 19, scenario 1, the net result of Vote 116 would be a loss of UGX 1.3 billion by NMS. Although NMS has UGX 10 billion in its current account, this would cover only 5 years before bankruptcy. In scenario 2, the only parameter that changes is the third-party handling fee average increases from 7.5% to 10%, resulting in NMS breaking even.

Table 19 also shows how each income stream contributes to the NMS’s profit or loss. Each income stream is divided by personal, procurement, storage, and distribution costs. Although the allocation is simplistic, the overall result of profit or loss is the same. Personnel and procurement costs were allocated by percentage of turnover, while storage and distribution were allocated by space utilization percentage (see section 4.5.3). The table shows that handling fees actually cover the operation costs incurred by supplying the services.

NMS is urged to do their own calculations using figures they feel comfortable with to allow for a more meaningful model.

Table 19: Contribution to NMS bottom line by income stream

			Scenario 1		Scenario 2	
	CDC	MoH	Third Party	Total	Third Party	Total
Fee %	15	18	7.5		10	
Stock Value (UGX million)	8,538	16,648	55,066	80,252	55,065	80,252
Income (UGX million)	1,281	2,997	4,130	8,407	5,507	9,784
Personnel (UGX million)	32	61	203	296	203	296
Distribution (UGX million)	313	2,314	500	3,127	500	3,127
Storage (UGX million)	510	994	3,289	4,794	3,289	4,794
Procurement (UGX million)	166	323	1068	1,557	1068	1,557
Total Costs (UGX million)	1,021	3,692	5,060	9,774	5,060	9,774
Net Profit/(Loss) (UGX million)	260	(695)	(930)	(1,367)	447	10
Profit/loss %	20	-23	-23	-16	8	0

4.4.4 NMS and implications of Vote 116

NMS no longer sells to facilities, but acts as a procurement and logistics agency for MoFPED. This means that NMS can no longer obtain income from product sales.

NMS no longer pays for stock but still has a contractual responsibility to the supplier. NMS takes all the contractual responsibility for the procurement, but is unable to control when the MoFPED actually pays suppliers. However, NMS triggers the payment process informing MoFPED that the supplier has delivered. If the MoFPED does not pay, the supplier will look to NMS for legal recourse and not MoFPED. However, payment to suppliers has improved dramatically over the last four years and is now down to 85 days from over 200 days, making it more attractive for suppliers to do business with the government.

At the end of June 2009, NMS had UGX 11.3 billion of stock that can no longer be sold under Vote 116 because MoFPED only purchases supplies from approved suppliers, which NMS is not. Before Vote 116, NMS was able to sell its stock for the purchase price plus a mark-up. Therefore, as NMS distributed stock from its stores using the first expiry first out principle, it was their own stock that was in the stores at the end of June 2009. As the MoFPED asks NMS to buy more stock, the stock being distributed is replenished. But instead of NMS getting 100% value for the stock plus a mark-up, the left-over stock in their stores was only worth 18% of its value. This means the asset value that NMS had in stock holding decreased by 82% every time it distributed their own stock and not the stock MoFPED paid for.

Although the stock volume may remain the same, the stock value is reduced as more new deliveries enter the store. It is unfortunate that NMS did not identify the stock on their shelves as their own at the end of June 2009, which could have been done using the budget-holder functionality of the MACS system. This would have allowed NMS to easily track what stock it supplied out of its own assets, which would have made it easier to value those assets while a solution is developed.

According to the SURE price survey (section 4.4.3) NMS charges facilities a mark-up of 31% for products supplied. However, because NMS no longer gets money from health facilities, it is essentially eroding the facilities' spending power by 31%. This also means that although NMS buys enough products to cover 100% of the facilities' budget requirements, it only delivers 69%, leaving 31% of stock purchased on the shelf never to be supplied. NMS can resolve the situation by charging the cost price for medicines supplied to facilities and removing the mark-up that NMS does not see and that does not contribute to its operational costs.

4.4.5 Financial management improvement options

Increasing profit comes from either raising income or reducing costs. NMS is also faced with these two choices considering over the past four years, it has accumulated losses of UGX 3.6 billion (as per NMS income statements). However, NMS needs to fully analyze whether the fees charged cover the cost of the services provided.

Revise handling fee percentages

A fee sensitivity analysis shows that a mixture of fee adjustments may allow NMS to break even (Table 20).

Table 20: Handling fee sensitivity analysis

	CDC Fee/ % Profit or (Loss)	MoH Fee/ % Profit or (Loss)	Third Party Fee/ % Profit or (Loss)	Total profit or (Loss) (UGX million)
Current Fee	15%/ 20%	18%/ (23%)	7.5%/ (23%)	(1,367)
Increase Third Party	15%/ 20%	18%/ (23%)	10%/ 8%	10
Increase MoH	15%/ 20%	23%/ 4%	7.5%/ (23%)	(533)
Decrease CDC Increase MoH Increase Third Party	11.9%/ 0%	22.2%/ 0%	9.2%/ 0%	0

However any renegotiations require the following considerations—

- Will third parties be willing to renegotiate handling charges? If the percentage rises, it will affect their own project budgets.
- What is the real percentage fee that would be charged? NMS needs to assess this and take into account the real costs of supplying services to the customer. From the calculations above, changes in handling fees have a direct impact on NMS sustainability.
- Would the new handling fees be competitive compared to the private sector? Once fees are raised, customers may feel that they can obtain better value for money in the private sector and may take their business elsewhere.

Become an approved MoFPED supplier

With the onset of Vote 116, NMS had UGX 11.3 billion worth of stock at the end of the financial 2008/09 that could not be sold to facilities as discussed earlier. At this time, NMS cannot capitalize its business by selling its stock because it is not a supplier to the MoFPED. If NMS became an approved supplier, then its stock worth UGX 11.3 billion could be paid for by MoFPED and be used to cover operational costs.

However, this would be a one-time deal with the following implications—

- What price would MoFPED pay for the stock, because the market price for certain commodities may have decreased?
- Would there be a need to run a tender for NMS to supply the materials? Any procurement needs to be managed under PPDA policies.
- Does NMS have the products that MoFPED requires? The product mix may have changed since NMS bought the products some 12 months ago in some cases.
- There is a need to capitalize the stock or the value of this NMS asset because it will continue to devalue until it is worthless.

Action is urgently needed to overcome the current deficit in current NMS operations and to ensure financial balance in the longer term. Looking at increasing operational efficiencies, reducing operational costs, and increasing income all go a long way to improving NMS's financial sustainability.

4.5 NMS procurement

As shown in the pricing survey discussed earlier, NMS procures medicines at prices well below those quoted in the *International Drug Price Indicator Guide*, although there is room for improvement as illustrated by lower JMS prices. However, procurement at NMS is subject to PPDA rules that are relatively inflexible and were not specifically designed for the pharmaceutical sector. A procurement cycle can last as long as 7 months—3.5 months for the actual procurement activity and a further 3.5 months for suppliers to deliver. This results in many purchases being made under the “emergency” provisions allowed in the PPDA system. Procurement can also be complicated by government decisions (e.g., a recent requirement that all medicines be “embossed”) or by routines demanded by NMS itself (notably its interpretation that there is a 12-month limitation on frame contracts).¹⁰²

A 2005 PPDA study¹⁰³ noted NMS’s deviations from formal procedures, most without adequate grounds. Procedures followed in individual cases were also inadequately recorded. The most recent financial audit by the auditor general for 2005 to 2008 classified 67% of procurements as high-risk. While this could be correct in the strict interpretation of the law, the law does not give NMS enough flexibility to operate as a resupply organization instead of an end user. While PPDA granted NMS a significant degree of exemption from its general rules for procurement, the system would benefit from an agreement on clear rules on procuring medicines and on deviations that should be rare exceptions.

The NMS developed a Procurement Policy and Processes Manual to address specific EMHS procurement issues and reduce bottlenecks due to the current PPDA procedures. NMS submitted the revised manual to PPDA for accreditation in February 2010.

4.5.1 Cost of procurement at NMS

NMS procurement operations appear to be relatively costly, estimated at 11% of the cost of goods (Table 21).

Table 21: Procurement department costs in 2009 (UGX)

Allocation	Cost in UGX
Salary	202,352,548
Benefits	404,705,096
Overhead	950,075,100
Total	1,557,132,744

Salaries were taken from gross salary scales provided by NMS. Benefits are paid by NMS on a 2:1 basis, UGX 2 paid in benefits for every 1 UGX paid as salary. Also, an estimation of 15% for overhead is included (obviously this number can change, but was the subjective percentage taken for this exercise). The total is then divided by the total value of goods NMS purchases on behalf of the MoFPED.

¹⁰² Bureaucratic procedures also impede the use of frame contracts; such a contract can only be signed after funds to cover it have been released by the Ministry of Finance, and the funds remain available only for a very limited period.

¹⁰³ Government of Uganda, Procurement Audit and Disposal Report of National Medical Stores—Entebbe, May 2005.

Although exact comparisons are difficult, one independent private procurement agency stated that it charges only 5% of the ex-works cost of goods, while another agency cites a cost of only 3% of the cost, insurance and freight cost or 3 to 5% of cost of goods.

4.5.2 Framework contracts

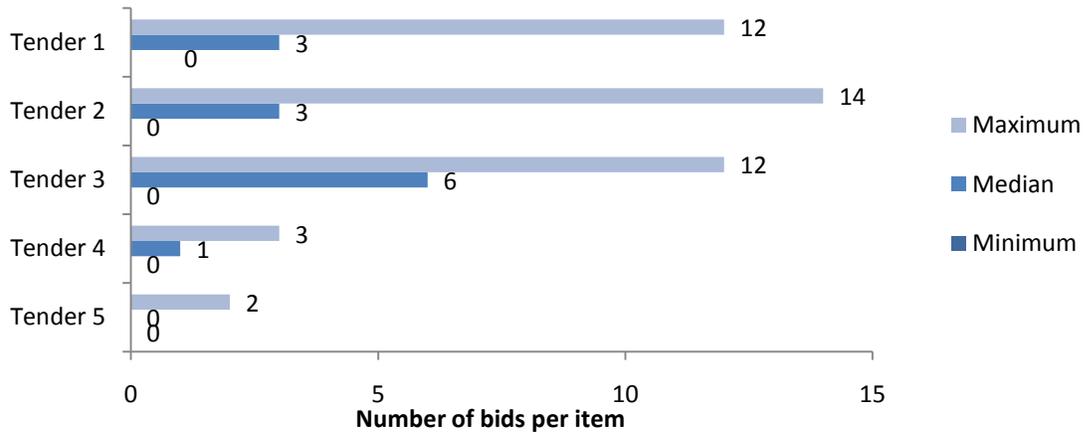
Although articles 237–245 of the Public Procurement Disposal of Public Assets Act provide for fixed-price framework contracts of up to 18 months and price-adjustable contracts of up to 36 months, NMS makes framework contracts for 12 months and reports that they are unable to manage price adjustments within the present PPDA framework. However, the price-adjustment formulas contained in PPDA regulations are designed primarily for civil works and commodity (e.g., oil) procurement and are inappropriate for pharmaceuticals. An alternate mechanism is required based on documented and verified increases in active pharmaceutical ingredient prices. Another constraint to framework contracts is that full funding must have been released by the MoFPED prior to signing the contract. While this is true for fixed price, fixed quantity contracts, it is not the case for framework contracts beyond the estimated quantities for the first year of the contract according to the current law. Interpreting the law related to framework contracts is also a problem; for example, where the PPDA interprets framework contracts as limiting quantities to be purchased to the tendered quantities with no flexibility to purchase additional quantities without re-tendering, yet in the law one can buy in excess of the tendered quantity in as long as the price remains fixed. In other words PPDA interprets the clause in the law as a fixed quantity instead of a fixed price contract which reality is the conventional definition of fixed-price contracts. NMS has already taken up discussion with PPDA on how to manage price increases over subsequent years and how to reduce competition for tenders or use penalties to manage poorly performing suppliers. These obstacles can be overcome by developing clear tender instructions for pricing parameters, removing impossible penalty clauses, and black-listing suppliers where necessary.

4.5.3 Tendering

NMS cannot be too careful when it comes to excluding suppliers because recent tenders have had few suppliers for certain items. In addition, with Vote 116, facilities are not allowed to buy their own items; therefore, Mulago hospital for instance has now allocated all its purchasing of cardiac and ophthalmic products to NMS who has no prior experience with these products. In addition, NMS does not invite all prequalified suppliers to tender for a product, plus, NMS prequalifies by individual product, which makes tendering very cumbersome. More efficient systems individually prequalify only top quantity-value drugs (using a regularly updated ABC analysis) and then by a small number of lots (e.g., by therapeutic category for lower quantity-value items). Such an approach makes it possible to attract manufacturers directly for the high-value items, whereas suppliers and agents would be the target for the lower value items tendered in lots.

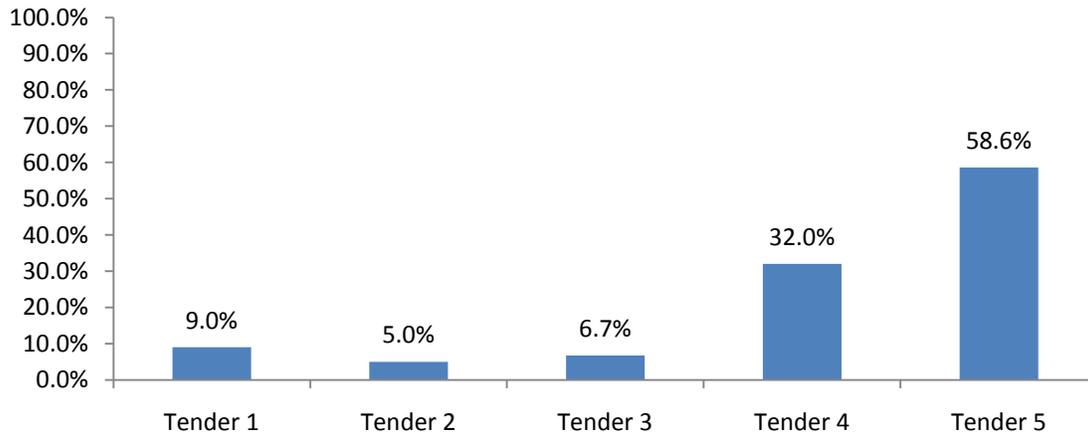
Figure 42 shows that there is a sufficient number of bids per item for tenders 1, 2, and 3 to ensure competition and optimal prices. However, these fall off for the last two tenders; tender 4 was for medical equipment, involving only a few specialized suppliers, and tender 5 was to try and source items not obtained from the first 3 tenders.

Figure 42: Number of bids per tender item



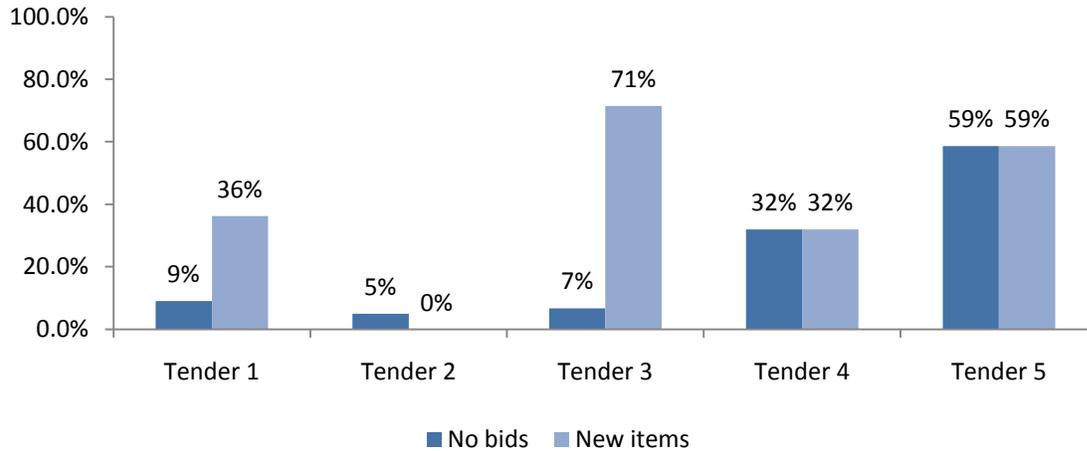
This is highlighted further in Figure 43, which shows that even with normal tenders, the amount of items without bids ranges from 5% to 9%, emphasizing why it is important to encourage as many suppliers to participate.

Figure 43: Percentage of tender items with no bids



Finally, NMS does not have experience sourcing some of the items they now need to manage due to Vote 116, which can be seen in Tender 5 where 100% of all new items did not find a supplier (Figure 44).

Figure 44: Percentage of tender items with no bids including new items



4.5.4 Payment to suppliers

NMS cannot contract until funding is available, which can delay the procurement process even further. However, NMS is actively getting the procurement process to the contract signature stage, which means no time is lost once MoFPED makes funds available. To ensure that suppliers are paid on time, MoFPED releases funds three weeks after NMS requests it (under Vote 116). This process has successfully reduced the time taken to pay suppliers.

Due to the nature of funding process in the last quarter of the financial year, it is a concern that NMS will only have 1.5 to 2 months to complete the procurement before funds revert to treasury, leaving suppliers unpaid. NMS has tried to limit the impact of this by planning for framework agreement deliveries to occur at the beginning of June, giving them four weeks to pay the suppliers before funds are taken back centrally.

4.5.5 Procurement options

The PPDA protects and ensures that procurement adheres to good procurement practices in selecting and contracting suppliers. However, the PPDA regulations must provide the necessary flexibility and opportunities for NMS to achieve good procurement outcomes. Uganda could follow the lead of some other countries, such as Tanzania, by enacting a special regulation to supplement the PPDA rules that deal with the special needs of medicines procurement. There is a general perception that PPDA regulations constrain NMS from conducting efficient and effective procurements. On the basis of these perceptions, NMS has requested accreditation from PPDA to allow an exemption specifically for pharmaceutical products from PPDA requirements.

Further work is required to identify possible PPDA regulations revisions to allow implementation of the proposed options and increase NMS performance. Within any procurement operation, guidelines and rules are needed to ensure that transparency is paramount and that the process is fair and cost effective for suppliers and buyers alike. However NMS (unlike JMS) is subject to rigorous policies and procedures overseen by the PPDA. These policies have made NMS very inflexible with their purchasing process and a full procurement cycle can take seven months. More flexibility would allow NMS to react quickly, for example, to a stock out or emergency situation within days and not months. It is critical that NMS

collaborate with PPDA to develop new ways of allowing flexibility, but also maintain transparency and value for money. Conducting annual system audits of procurement processes using indicator-based performance monitoring would help NMS procure more efficiently.

There are several areas that NMS can look at in improving flexibility and also ensure maximum benefit from global best practices in procurement. Such best practices include—

- Improved framework agreements
- Increased thresholds for different procurement methods
- Split tender awards
- Consider outsourcing hospital specialist procurement

Improve framework agreements

We can see from Table 22 that NMS is enjoying some of the benefits of framework agreements. However, NMS could improve the agreements increasing the time frame for the contracts. This would give suppliers security and NMS more time to plan deliveries and to use the contract to not only smooth unforeseen demand but reduce procurement costs because there would only be one procurement every three years. With strong contract management and clear bidding instructions, poor supplier performance and annual price increases can be taken into account.

Table 22: NMS framework contracts: current and recommended

Attribute	Current NMS Practice	Recommended
Contract period	12 months	> 24 months
Delivery schedule	Monthly and quarterly	Monthly or quarterly
Quantity adjustments	Included in contract	Over 10%
Management of price increases	Not doing	Basis for increase in bid documents
Reduced costs of tendering	Being executed	Fewer tenders that are larger will cover larger requirement

Modify thresholds for conducting procurement modalities

PPDA specifies the procurement method to use based on the values of the procurement. The existing thresholds are very low and are based on the total procurement. For a fully restricted tender, the value of purchases must be above USD 15,000. However with today's expensive medicines, only a few items would push a purchase over that threshold, requiring seven months lead-time and the full cost of running such a tender for an emergency procurement. However, if the threshold was increased to USD 100,000 then a quicker procurement method could be used for emergency purchases. PPDA has developed the proposed figures in Table 23.

Table 23: PPDA proposed figures

	Existing Threshold	Proposed Threshold
Restricted domestic or international bidding	> UGX 30 million	> UGX 200 million
Quotations or proposals	< UGX 30 million	< UGX 200 million
Micro procurement	Up to UGX 2 million	Up to UGX 10 million

Benefits of this method include a faster procurement process for low-volume or low-cost items, cost reduction associated with restricted and open bidding, and greater flexibility to cover repurchases. A negative point is the increased workloads associated with carrying out lower-value procurements. Although this means more work for the procurement department, it saves money on actual procurements.

Split tender awards

We saw earlier that NMS has suffered from lack of suppliers for certain items. One contributor may be that NMS has to contract with the lowest qualified bidder; however splitting awards would encourage more suppliers to submit tenders for the business. The cost of procurement is increased, but the risk of non performance by the suppliers is reduced because failures will result in them losing revenue.

Using this method of procurement produces several advantages including reduced stock-outs because NMS can call on both suppliers to deliver in emergencies, and both suppliers will be encouraged to perform or run the risk of losing the contract. In addition, there is a reduced need to re-run the tender process if one supplier fails to deliver. Limitations include an increase in purchasing price, required modifications to PPDA regulations, and applicability only to items with several interested suppliers.

Figures 45 and 46 illustrate the total cost calculated for 144 tendered items applying different splits in the tender (i.e., splitting the tender between the lowest and the second lowest price and how an applied split will influence the acquisition cost). By moving from a 80/20 split towards a 50/50 split that includes a higher proportion of the second lowest price, the acquisition cost increases, but so does supply safety.

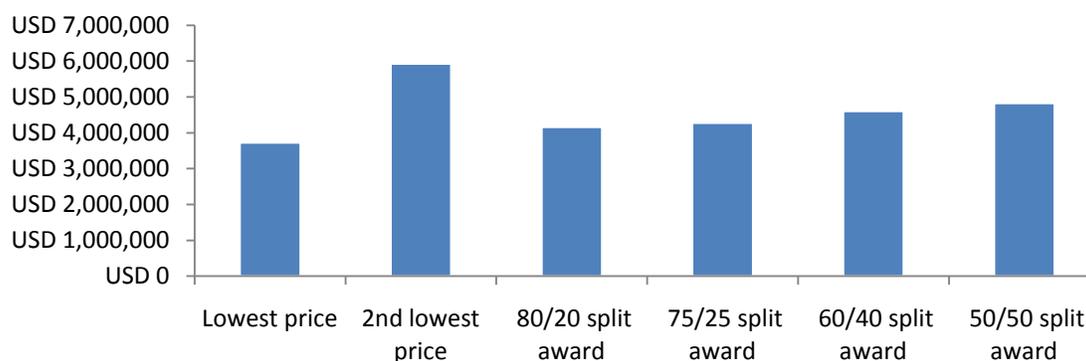
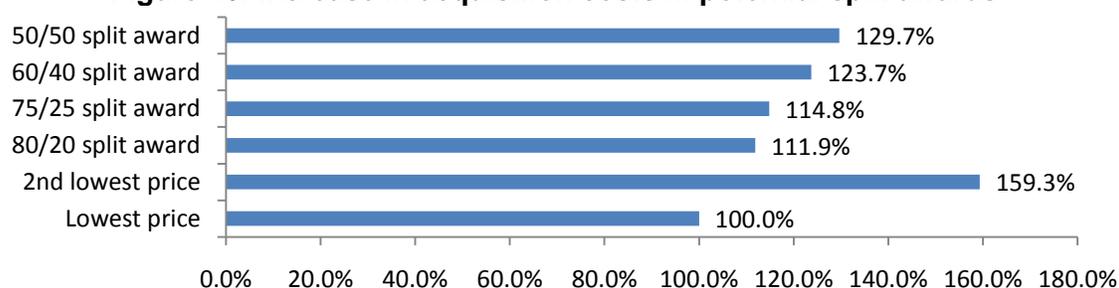
Figure 45: Affect of potential split award on total cost for 144 tendered items

Figure 46: Increase in acquisition costs in potential split awards

4.6 NMS storage and operational efficiency

Danida funded an entirely new purpose-built warehouse for NMS, which opened at Entebbe in 1995/06. A second building adjacent to the first has led to some operational difficulties because of its vertical design. NMS has also had to rent warehousing space to increase capacity at other sites. A fundamental problem results from the main Entebbe location, which is 34 km from the main junctions with the national road system at Kampala, with all traffic being obliged to negotiate the overburdened Entebbe-Kampala road. Recommendations from previous warehousing studies have not been consistent, ranging from maintaining a single warehouse at Entebbe or Kampala to using of multiple warehouses/distribution centers.

4.6.1 Warehouse rating

Using the Pharmaceutical Healthcare Distributors, Ltd. warehouse rating system, which assesses warehouse management, infrastructure, security, signage, offices, regulatory issues, and health and safety, NMS scored between silver and bronze (Table 24). In comparison, Rwanda's central medical stores (CAMERWA) rated bronze and Mozambique's central medical stores (CMAM) rated basic. This assessment was based on work done before the end of 2009 and follow-up assessments would be able to show how technical assistance has improved the scoring. For example, management has increased efficiency in some specific respects, such as almost doubling the number of items picked per person per day by introducing a night shift. The assessment also highlights areas for improvement and focuses technical assistance.

Table 24: Warehouse rating

Platinum	Gold	Silver	NMS	Bronze	Basic
100	87	58	40	30	14

Scores are in Annex 5.3

Some actions needed for NMS to achieve silver status include—

- Adding temperature controls and cooling systems. NMS does not have thermometers in the cold rooms especially ones with alarms. Although other parts of the warehouse have thermometers, procedures do not allow for corrective action if temperatures go outside normal limits.

- Instituting formal cleaning and pest control registers to ensure that the warehouse is free from pests that can attack products and that the warehouse is clean and provides a safe working environment.
- Updating full and recent process maps showing value added and non-value added processes linked to up-to-date standard operating procedures. In 2007 a workshop focused on value-added and non-value added process. This should be a normal part of any operational review process and integrated into management procedures without waiting for technical assistance-initiated activity. It is critical to do a full process review first, especially ensuring that the MACS system is fully integrated into any processes. Once this has been completed new SOPs can be developed.
- Adding a process to monitor and update SOPs. SOPs are living documents and need to change as the operation changes. Any changes to SOPs need to be captured and all operations personnel trained on procedures and changes to procedures.
- Incorporating full regulatory and safety signage with clear health and safety guidelines. This allows for a safe working environment and increases staff moral and output.

4.6.2 Storage utilization by client and commodity type

To calculate how much storage each client uses, we looked at the pallet spaces available and how many were allocated to each customer for a 12-month period. The result was CDC was allocated 10%; NMS was allocated 74%; and third parties were allocated 16%. This shows that even though third parties may have the highest volume (amount) of stock to manage, it was not as bulky as the items being managed directly by NMS. NMS needs to consider this analysis when attributing storage costs to income streams/customers. NMS will then be able to see if handling fees are being set at the right level.

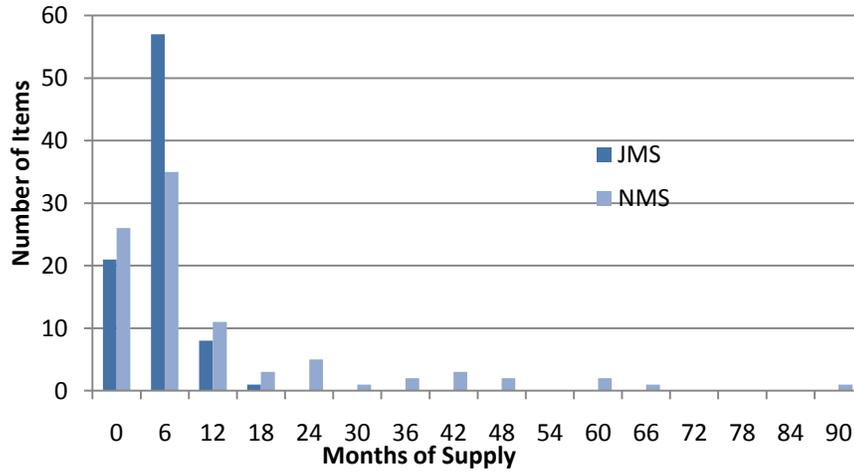
Bulk items occupy over 20% of space. SURE calculated this by taking bulk items such as male latex condoms, infusions, cotton wool, and bandages and using an NMS stock-holding report dated 28 February 2010, determined how much of each item was in stock at the time. NMS then gave pallet quantities for each of the items, which showed that 20% of potential space at NMS was taken up by bulk items at that time. Reducing the handling of these items by supplier direct delivery is a potential intervention.

4.6.3 Operational efficiency

NMS only turns its stock 1.5 times and JMS turns its stock 3.5 times per year. This means that JMS can operate with 18 months of supply; whereas, NMS has a long tail—sometimes with 90 months of supply for some items (Figure 47). NMS data was obtained from its October 2009 stock report and JMS data was obtained from a similar report. This graph shows that JMS's more flexible procurement process results in its ability to hold less stock and get products in a timely fashion. NMS is usually buying once a year and therefore has to suffer a less efficient stock management profile. Having items with over 48 months of supply indicates either the procurement team has bought too much stock or the average monthly consumption number used to calculate months of supply is incorrect (months of supply = stock holding/average monthly consumption).

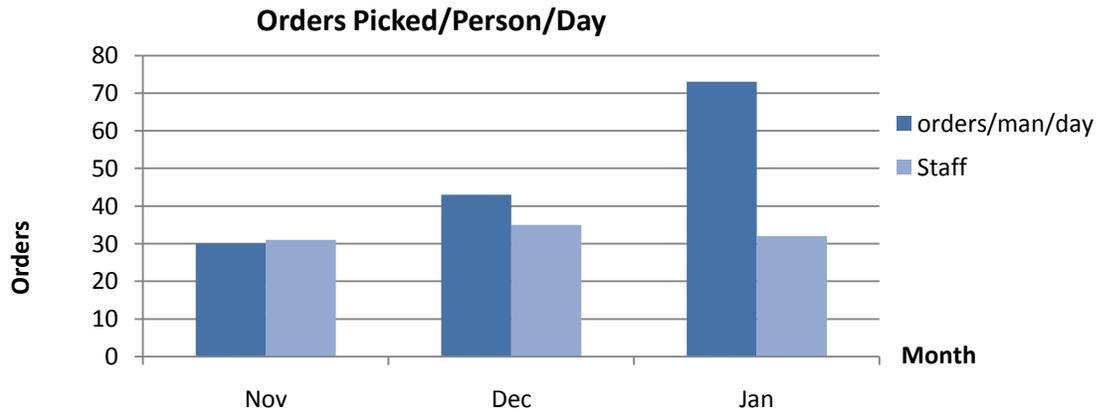
NMS has been able to implement some operational improvements, including the introduction of night shifts for picking orders and loading vehicles. With the onset of the night shift, orders picked per person day have doubled (Figure 48).

Figure 47: NMS inventory: Comparison with JMS



Adding three eight-hour shifts instead of two eight-hour shifts might triple output with the same team. However, night shifts can be physically draining for workers. Staff needs rest days and rotation. Also, a review is needed of additional costs associated with the extra shifts, such as extra lighting, security, and facilities such as food and water available outside normal working hours. That said, NMS initiated this on its own and it appears to be generating good results.

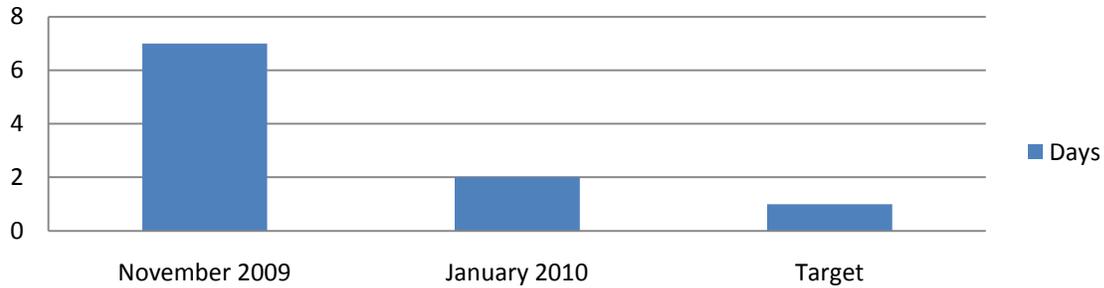
Figure 48: Operational efficiencies: order picking



One of the key activities in the warehouse is ensuring that goods received are processed properly. Goods receipt means checking the delivery, entering the lot number, expiry date, and quantity onto MACS, having Quality Control check the products for correctness against procurement specifications, then to put the stock away in its proper location before Quality Control approves the stock for distribution. This is the only time that primary warehouse data can be entered, so it is critical to get it right. Stock should also be made available as soon as possible to allow it to be distributed quickly. NMS has been able to reduce the time for this process from seven days to two days in the past three months

by using the MACS system better and having a coordinated process when goods arrive (Figure 49). The norm for this type of process is one day, so there is still work to be done, but progress is being made.

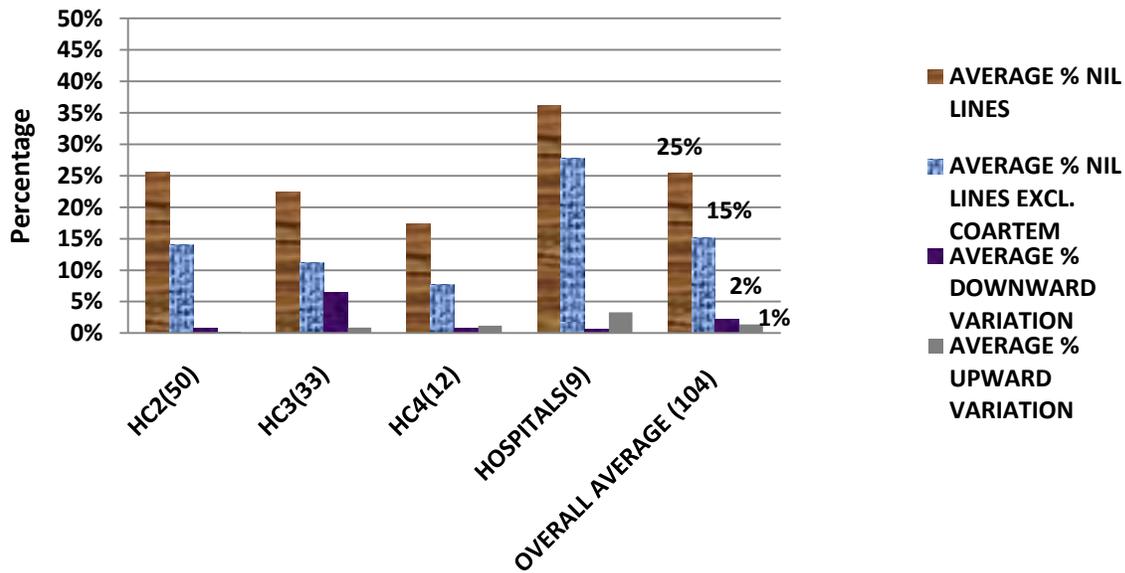
Figure 49: Operational efficiencies: goods receipt



One of the key measures of how well procurement and distribution practices are working is by order fulfillment efficiency. This is a measure of how many items in a given order have been supplied. To find out NMS’s performance, SURE reviewed all orders processed for the six months between July and December 2009. The orders came from the following facilities: 50 HCII, 33 HCIII, 12 HCIV, and 9 hospitals. The survey included 264 total orders.

Ideally the percentage service levels should be 100%. A high percentage means high stock holding costs and possible expiries and too low means out-of-stocking facilities. The order fill performance level was 75% in facilities overall with average of 25% nil lines (meaning items completely stocked out) (Figure 50). HCIIIs had the highest level of unfilled items among facilities, excluding hospitals. It is possible that the HCII facilities are asking for products outside their approved level of care. High unavailability at hospitals could be due to the wide range of medicines ordered that may have been unavailable at the time. Importantly, Coartem® was among the vital items that were stocked out at all levels. This analysis illustrates how one item can influence order fill efficiency rates. Also, stock-outs of vital items severely impact health or cause death.

Figure 50: Order fills efficiency percentages from NMS



The study also finds that NMS is supplying more of some items than ordered—“pushing” items, measured as average % of upward variation (1% overall). This can happen when NMS has too much of an item in stock and there is a risk of expiry or by mistake. However, pushing supplies to facility level only moves the problem further downstream, and at the same time, the facilities have to pay (deducted from their credit line) for supplies they did not order. Also, NMS short-filled some items by rationing their supplies, which is measured as average percentage of downward variation (2% overall). Rationing makes delivery performance even worse because full order delivery performance is measured at 75% of lines *filled*, however, 2% of the filled lines are only partly filled. Downward variation may be justified at times, especially where facilities quantify incorrectly. The other scenario is when stock is insufficient, then NMS has to ration orders.

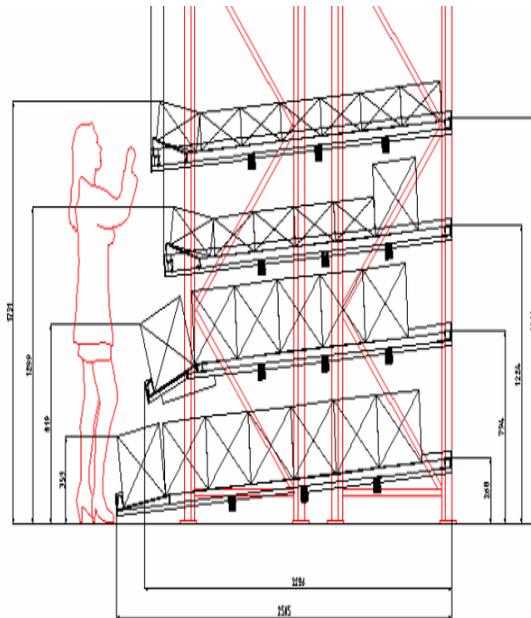
4.6.4 Storage and operational options

NMS has received a lot of technical assistance from several projects over the years and performance continues to improve. However, NMS still has challenges as new technology and tools are introduced.

Improve carton management

The carton management system, commonly known as gravity-fed racking, has already been installed in NMS but has not yet been fully implemented. When in use, the 100 fastest-moving items will be picked from the gravity-fed racking. This will be of special importance when packing similar orders as is the case with the kits. The design, which requires picking from the front of the racking forces products behind to roll down the tracks (Figure 51). This preserves first-expire-first-out distribution because the picking face is replenished from the back of the racking. NMS needs to integrate the gravity-fed racking system with the MACS warehouse management system to allow maximum benefits.

Figure 51: Carton management using gravity-fed racking



Improve temperature management

Ensuring the pharmaceutical product integrity requires temperature control. In several NMS stores the temperature can reach over 28°C, which could be managed by adding roof insulation and instituting tighter temperature monitoring. NMS is using very old mercury-based thermometers in some areas of the warehouse, and while staff records the temperature each day, there is no process in place to manage storage temperatures when they exceed the norm. Enhancing the standard operating procedures for temperature monitoring and use of electronic temperature recorders to graph the temperatures daily could strengthen the temperature management for the stores and allow management to take preventive measures for temperature control..

Improve information management

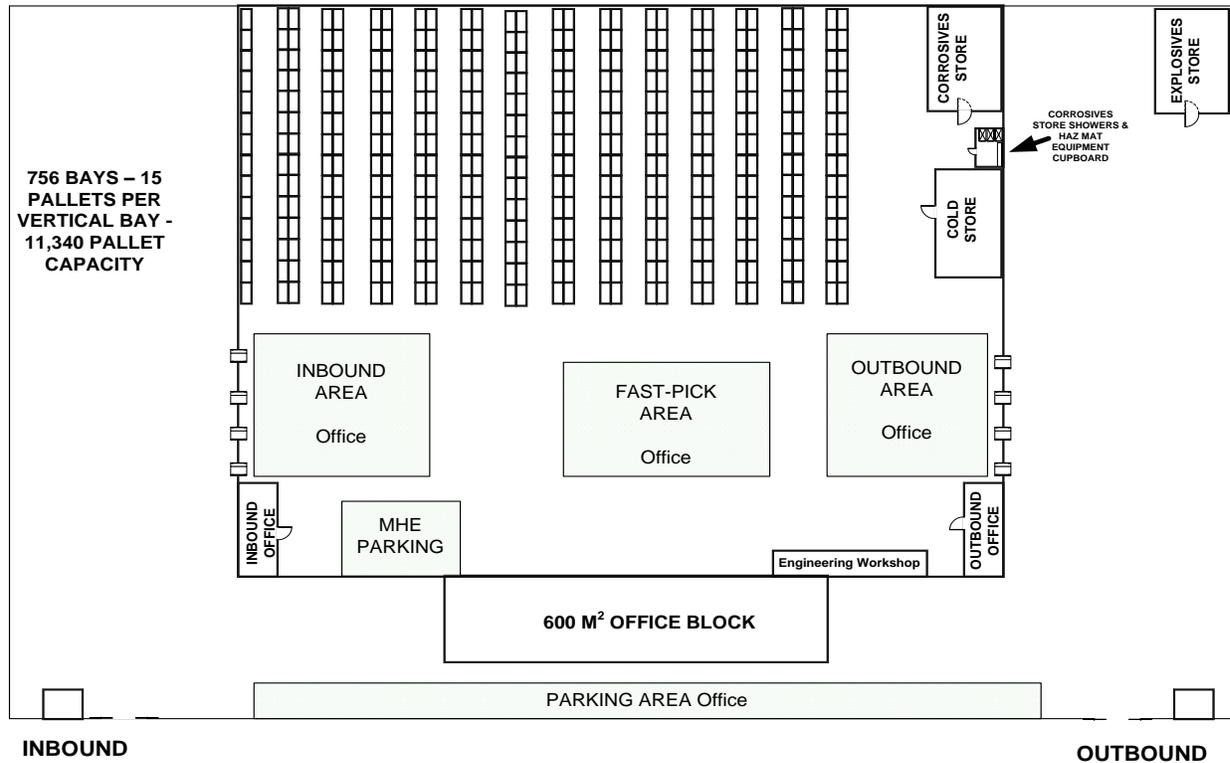
Recently a new logistic warehouse management system, MACS, and a financial system, SAGE, have been installed at NMS with support from SCMS. However, MACS does not support all the processes adequately, especially inventory management in areas such as expiry date monitoring, forecasting, perpetual inventory and stock valuation. MACS also has poor purchase module and sales management and does not support tendering and customer relationship management. In the short term however, improving the use of the MACS warehouse management system will allow NMS management to better monitor and control their operations ; for example, standard MACS reports include orders picked, orders not fully supplied to facilities, stock expiry date profiles, average months of consumption, goods receipt performance, stock accuracy, and much more. These reports can then highlight where the operation needs to improve or can simply be used as a monthly performance report to facilities. Although the MACS and SAGE software at NMS are now reasonably stable and able to minimally support ongoing operations, MACS and SAGE as implemented do not contribute to good financial management, with the stock valuation function completely dysfunctional, worsened by a poor interface between the two systems. In the medium to long term, therefore, an alternate warehousing and financial management information system may need to be identified. Substantial time and resources will be needed to ensure a smooth transition to a new system, which take up to 24 months.

Consider building a new facility

Discussions with NMS senior management revealed some interest in relocating the main warehouse from Entebbe to the Northern bypass. An SCMS technical report in 2007¹⁰⁴ included this proposal and a possible warehouse design (Figure 52).

¹⁰⁴ Andrew Hayman. Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

Figure 52: Potential new warehouse design for NMS



A newly designed facility would also help NMS maximize operational efficiency, by having defined loading docks with dock levelers, work areas with no pillars to interrupt workflows, and offices outside of the building to maximize storage space. According to NMS, the land itself would cost around UGX 2 billion and the facility around UGX 10 billion (including material handling equipment and additional racking). This figure is based on 2007 estimates plus 20% to take into account price increases. NMS could obtain some capital to pay for a new warehouse from the sale of the old facility.

SURE calculated that a move from Entebbe would reduce transportation time and costs (UGX 145 million per year). This was calculated by taking the number of trips per month using NMS vehicles and multiplying them by 64 (the distance in km to and from the Northern bypass and the Entebbe store), then by 12 months, then by the transport cost per km. When also adding the extra cost of transport by suppliers then the savings begin to add up. Distribution will start on a major trunk road allowing savings of at least 1.5 hours per trip to customers, which also reduces the wear and tear on the NMS vehicles because the Entebbe road is overcrowded and in disrepair.

Disruption to operations would occur because stock, staff, and equipment would be transferred from old to new locations. This could mean that customers would be without orders for a certain period. Also, some staff may not want or be able to relocate. Due to some of the space-saving options being projected in the report such as framework agreements and direct deliveries, the space requirement may decrease, so it is important to do a space assessment to validate this.

4.5 Distribution

Several studies have been undertaken to strengthen distribution including those from JSI/DELIVER and Boston University in 2003, Euro Health Group in 2004, PEPFAR in 2007, and Transaid in 2008^{105,106,107}. Although many of the recommendations have been addressed, distribution still constitutes a challenge. For example, a recent review¹⁰⁸ of focusing on service delivery in key sectors including health undertook field visits to four districts of Gulu, Luwero, Nebbi, and Hoima and found that no deliveries had been made in four months to any of the four districts.

To optimize distribution and determine the appropriate transport fleet and commercial mix, more in-depth analyses are needed of leaving time, driving time, stop times, clutch and brake usage, speeds traveled, and distances traveled between stops and total for the journey.¹⁰⁹ Moreover, NMS needs a stronger organizational set-up for in-house distribution/transportation management including strengthening the staffing levels and their skill set, standardizing procedures and monitoring performance, independent of how fleet management will evolve.¹¹⁰

4.5.1 NMS cost effectiveness in distribution

The 2003 study¹¹¹ revealed that district-based delivery costs were excessive relative to what should be achievable, but that NMS should not take over the district's distribution of EMHS to the lower health units. Estimates from the study suggested that distribution costs would be 82% higher if the NMS took over responsibility for delivery to the health sub-districts relative to the prevailing district-based delivery approach.

The current delivery cycles are every two months to all health facilities, but hospitals can request monthly orders. Order schedules and delivery schedules have been introduced and mechanisms to strengthen adherence are being explored. Each facility orders from NMS using its allocated budget for that cycle on the Vote 116 account for EMHS and the CDC-funded credit line for laboratory commodities. The orders are packed and labeled for the facility. Hospitals receive their supplies directly from NMS; whereas, facility orders are delivered to the district store that functions as a transit store. In 2004, the turn-around time ranged from 7 to 10 days (except for Central Region). Of this, only 30% was the actual travel time; the rest spent on verification at each destination.¹¹² In Uganda, every single box is opened and checked at the destination in the presence of the district internal auditor, but in a recent development, the resident district commissioner must also be represented during the receipt of medicines and health supplies. This check usually occurs when the order reaches the district store, the health sub-district, and finally the facility. Each time the delivered boxed is checked against the delivery note, but also the content of each box is often counted. Systems to avoid this duplication of efforts and introduction of a risk factor for losses have been suggested, but the problem still prevails.

¹⁰⁵ Euro Health Group. Technical Review of National Medical Stores, MOH, GoU & Development Partners, July 2004.

¹⁰⁶ Transaid. National Medical Stores, Entebbe, Uganda. Operational Assessment of the Transport and Logistics Operation. July 2008.

¹⁰⁷ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. PEPFAR 2007.

¹⁰⁸ FINMAP (November 2009).

¹⁰⁹ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

¹¹⁰ Transaid. National Medical Stores, Entebbe, Uganda. Operational Assessment of the Transport and Logistics Operation. July 2008.

¹¹¹ Medical Care Development International and SEREFACO. Consultancy Services for the Policy Review of the Role of the National Medical Stores in the Public and Private Health care System in Uganda. August 2006.

¹¹² Euro Health Group. Technical Review of the National Medical Stores. Ministry of Health, Government of Uganda & Development Partners. July 2004.

NMS delivers supplies to referral hospitals, district hospitals, and district health offices. The district health offices then deliver to health sub-districts and or health facilities, except where facilities choose to collect orders. NMS has its own fleet of 12 delivery vehicles, recently equipped with a C-Track onboard computer tracking system. Four of the vehicles are over 13 years old, and one is actually over 20 years old. The NMS vehicle fleet includes a mix of newer and very old trucks, and vehicle durability is in doubt considering the costs associated with fuel, tires, and maintenance increase disproportionately with an older fleet.

The number of districts has increased from 58 in 2002 to 80 in 2006 and is reaching 116 in 2010. The increase has resulted in a doubling of the number of delivery points. To manage the increase, the route structures have had to be adjusted and vehicles procured. In 2006/07, NMS made route adjustments based on the geographical location and new district structure, but not on time, distance, or volume. The 2007 PEPFAR study recommended that the routes be optimized and cross-docking stations introduced. It would be essential to model the effect of implementing three or four cross-docking stations where pre-picked loads could be delivered more frequently than every two months and then shipped via much smaller vehicles to the ultimate district destinations.¹¹³ To be more efficient in delivering to districts, NMS is considering developing a structure with warehouses in Gulu, Mbale, Mbarara, Fort Potal, and Kampala.¹¹⁴

A number of service providers ship supplies to private not-for-profit and public sector facilities. While NMS delivers EMHS, ARVs, ACTs, laboratory supplies, other agencies ship PEPFAR-funded ARVs, ACTs, and vaccines—sometimes to the same drop-points as those serviced by the NMS. The public sector distribution arrangement has multiple delivery vehicles that follow the same routes to the same drop-points, which wastes resources and prevents the NMS from achieving a higher critical mass for its delivery volumes. JMS does not normally distribute supplies; customers bring their orders to the office in Kampala and take the goods with them using their own transport.

NMS distribution costs have sometimes been underestimated, reflecting only the transport operation costs. Including the relevant personnel and other costs associated with distribution, the expenses amounted in 2009 to UGX 3.1 billion (Table 25). SURE calculated the annual distribution costs by taking NMS's average monthly running costs, which cover fuel used (using the cost of a liter of fuel in March 2010) and costs of maintenance and added personnel costs and a 10% contribution to overhead. Depreciation was not included in these calculations, but that would make the costs even greater.

From these calculations, the cost of distribution just for NMS stock was 21% of the cost of goods. However when CDC and third-party stock is factored in, the figure is an acceptable 5%. NMS runs a 30-day order management cycle and endeavors to pick, pack, and ship all orders in that time. Most facilities, however, order on a 60-day cycle. There is a need to synchronize monthly deliveries, where possible, to limit out-of-stocks and improve delivery performance.

¹¹³ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

¹¹⁴ MOH (Ministry of Health, Uganda).Task Force on National Medical Stores, Draft report 2008.

Table 25: NMS distribution costs 2009

Individual Cost	Average/Year=UGX*
Fuel liters used	158,371
Price per liter*	2,200
Fuel cost*	348,416,200
Running and maintenance cost	125,649,616
Payroll	179,88,719
Benefits	400,397,472
Per diems	181,000,000
Goods in transit insurance	1,186,341
Vehicle book value – depreciated value	1,141,000,000
Comprehensive vehicle insurance	116,411,412
Contribution to operational costs (overhead)	633,383,400
Percentage of cost of NMS goods	21%
Percentage of cost of all goods	5%
Total costs	3,127,333,159

* Adjusted for 2010 fuel prices (UGX 2,200/L)

4.5.2 Capacity utilization

The PEPFAR study found that the distribution operation was constrained by widely spaced sourcing depots, which created a long lead-time for loading while awaiting the arrival of product from the various external rented depots.¹¹⁵ Vehicles were idle for as long as three days during loading and relied totally on the manual efforts of the loaders.

The introduction of a vehicle movement tracking system would have improved distribution management; however, in addition to insufficient vehicle and distribution management, the existing tracking system is not functional and thus not being used. No statistics are maintained on route times, vehicle time and capacity utilization, vehicle costs, driving times versus off-loading times, number of cartons loaded, loading times, or driver and laborer hours. All of these statistics relate to efficient operations management.^{116,117}

Establishing whether NMS has the vehicle capacity to deliver to the district health office every month requires calculating the actual capacity available. The capacity utilization indicator is number of work days vehicles are in use divided by number of work days vehicles are available for use. The target is 100%. Average capacity utilization of trucks in 2003/04 was less than 50%.

In the case of NMS, in a year, each vehicle is available for 228 work days. With eight vehicles (the number in the NMS fleet younger than 13 years), the total number of available vehicle operating days is 1,824 (228 x 8). The calculation for the full fleet of 12 vehicles is 2,736 (228 x 12). The four oldest vehicles are consistently off the road being repaired due to their age, hence the two calculations (Table 26).

¹¹⁵ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

¹¹⁶ Transaid. National Medical Stores, Entebbe, Uganda. Operational Assessment of the Transport and Logistics Operation. July 2008.

¹¹⁷ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

Table 26: NMS distribution capacity to deliver to districts

kms traveled in 12 months	324,297
Average road speed	45 kph
Total hours traveling is 324,297/45	7207
Average number of trips/month	39
Number of districts	80
Hours taken to load vehicle	8
Hours taken to unload vehicle	1
Total hours loading vehicles is 39 x 8 x 12 vehicles	3744
Total hours unloading vehicles is 80 x 1 x 12 vehicles	960
Total hours vehicle is idle is 3744 + 960	4704
Total hours vehicle is utilized is 7207+4704	11911
Total days vehicle is utilized is 11911/8 hours	1489
Number of NMS vehicles	8
Number of operating days	228
For 8 vehicles total potential days is 228 x 8	1824
Number of NMS vehicles	12
Number of operating days	228
For 12 vehicles total potential days is 228 x 12	2736
Total capacity utilization for 8 vehicles is 1489/1824 x 100%	82%
Total capacity utilization for 12 vehicles is 1489/2736 x 100%	54%

Therefore, with 8 vehicles NMS can easily distribute to the district health office and have 19% spare capacity. With 12 vehicles that spare capacity increases to 46%.

NMS vehicle capacity can be assessed to the health sub-district using the same calculations (Table 27). To calculate the utilization, it was critical to define what the distance implication for delivery to the health sub-districts. This was calculated taking measurements off a Uganda road map and plotting where health sub-district offices are in relation to the district health offices. Although it was difficult to find all health sub-districts, the average increase in distance was estimated at 30%.

Table 27: NMS distribution capacity to deliver to health sub-districts

kms traveled in 12 months	97,289
Average road speed (KPH)	30
Total hours traveling is 324,297/45	3243
Average number of trips/month	39
Number of sub health districts	214
Hours taken to unload vehicle	1
Total hours unloading vehicles is 214 x 1 x 12	2568
Total hours vehicle is idle	2568

Total hours vehicle is utilized is 3243+2568	5811
Total days vehicle is utilized is 5811/8	726
Total utilization to sub-district is 726+1489 (days utilization to district)	2215
Number of NMS vehicles	8
Number of NMS vehicles	12
Number of operating days	228
Total potential days of activity for 8 vehicles is 228 x 8	1824
Number of potential days of activity for 12 vehicles is 228 x 12	2736
Total capacity utilization for 8 vehicles is 2215/1824	121%
Total capacity utilization for 12 vehicles is 2215/2736	81%

These calculations showed that to deliver to the health sub-district, there would be a need for 726 more days in addition to the 1,489 days needed for 8 vehicles to deliver to the district level. Therefore with 8 vehicles, NMS is 21% short of capacity, so NMS would need to get more vehicles on the road (Table 28). All 12 vehicles on the road would produce 19% spare capacity, but as already discussed, 4 vehicles are unreliable. Finally, now that the extra kilometers that would need to be travelled are known, it is easy to calculate the extra cost to NMS to deliver to the health sub-district.

Table 28: NMS vehicle capacity

Capacity Utilization	To health district office	To health sub-district
8 vehicles	81%	121%
12 vehicles*	54%	81%

As Tables 29 and 30 illustrate, for NMS to deliver to the health sub-district, it would need to increase its reliable fleet, but also find another UGX 0.5 billion to cover incremental costs.

Table 29: Cost of distribution to health sub-districts (UGX)

Extra cost to deliver to Health sub district	
30% additional mileage	
Mileage to district	324,297.45
Extra distance to HSD	97,289.24
Total to HSD	421,586.69
NMS cost per km	5,444.00
Additional cost to HSD	529,642,595.34

Table 30: Total cost for NMS distribution

Destination	Total Cost
Health district office	UGX 3.1 billion
Health sub-district	UGX 3.6 billion

The cost of distributing supplies weighs heavily on the National Medical Stores and is a major factor in its current annual deficit. The increased workload with the introduction of Vote 116 and the addition of districts has led NMS to consider using a commercial transporter. In 2007, the PEPFAR report recommended that NMS assess the feasibility of outsourcing the delivery of high-volume, low-value products (e.g., condoms) to transport contractors to better cope with the EMHS distribution.¹¹⁸

In the course of the policy option analysis, we obtained estimates from a number of private distribution firms to provide distribution services comparable to those currently operated by NMS. The tentative figures suggest the possibility for very substantial savings of about two-thirds from present levels; in addition, security and prompt service would still be ensured. It would seem advisable to examine this alternative further as policy options analysis continues, so that the conditions can be examined in detail.

If subcontracting appears acceptable, another option to consider is supplying goods directly to facilities, which eliminates the need for districts to maintain their own transport fleets. The savings achieved could also be calculated. JMS has dispatched goods using private contractors and is currently examining the prospect of providing a national delivery service through sub-contractors.

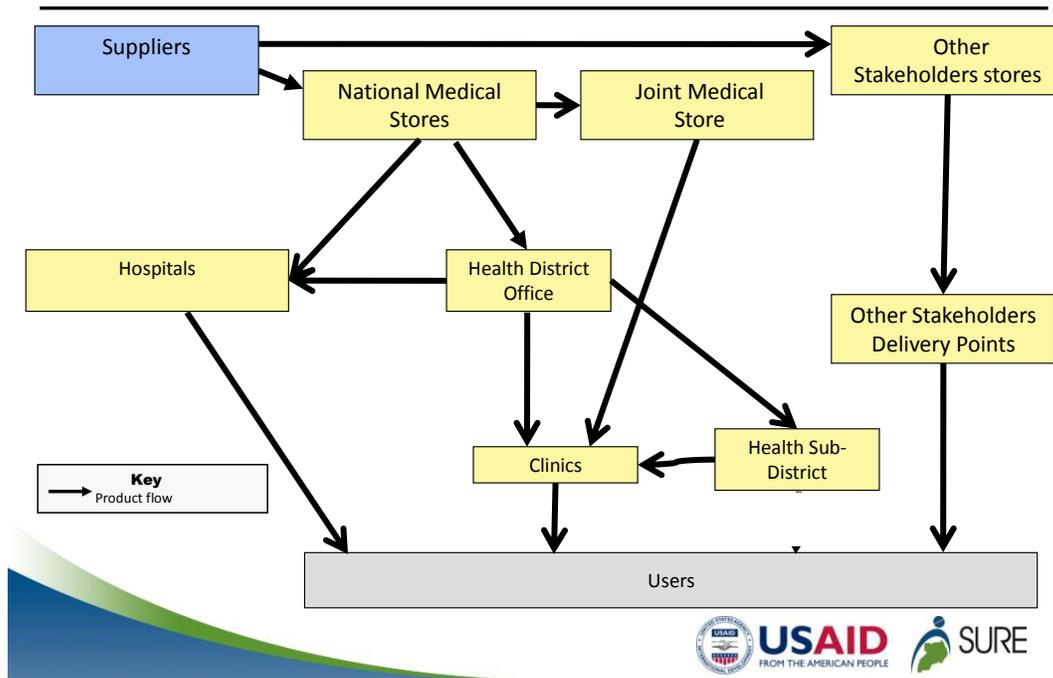
4.5.3 Distribution Options

Although the National Medical Stores experienced one failed subcontracted distribution in the past, it appears to have been due to the choice of contractor. The need to find a more economic mode of distribution is clear, and third-party distributors that specialize in nationwide distribution should be considered. The possibility of a joint distribution system serving both NMS and JMS should not be excluded, provided separation of supplies can be ensured.

The present distribution system in Uganda is depicted in Figure 53. Distribution is direct to hospitals, but to-the-door distribution for lower health facilities is the district's responsibility.

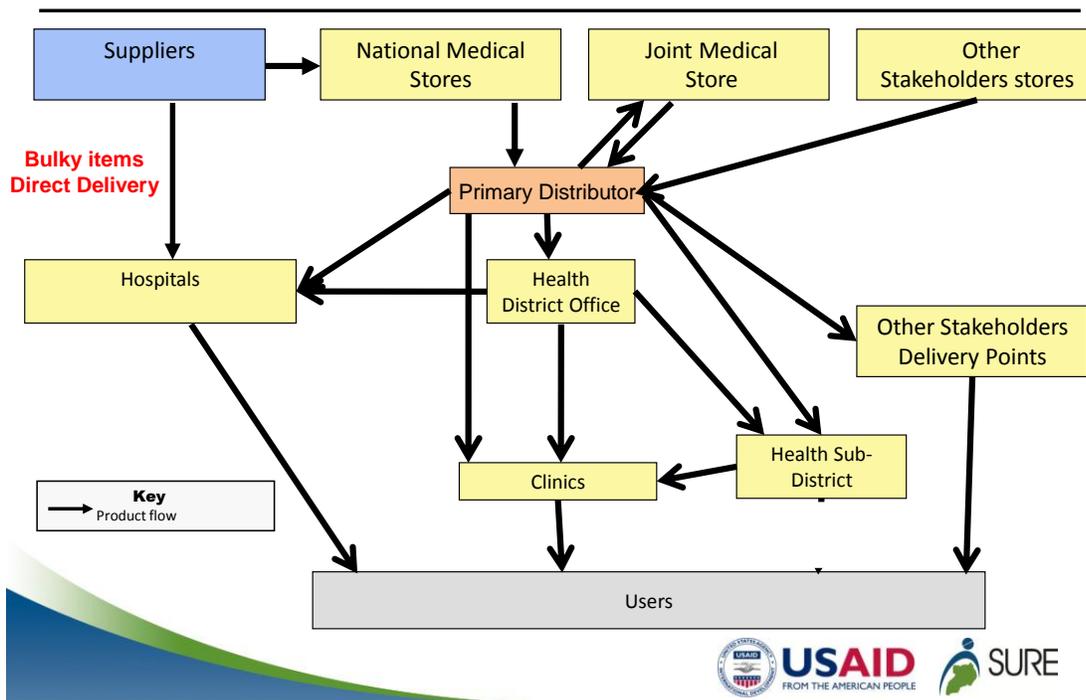
¹¹⁸ Andrew Hayman Assessment of the Warehouses, Distribution and MIS of the National Medical Stores, Kampala, Uganda, for Operational and Physical Enhancements. 2007.

Figure 53: Current NMS-based supply system



Outsourcing (Figure 54) illustrates how a third-party distributor could deliver products to the door for all facilities and open up possibilities for harmonization and cost savings.

Figure 54: Option of primary distributor-based supply system



Direct delivery of bulk items

As reported previously, more efficient space utilization in the warehouse is a potential cost-saving tool. This option reduces the need for renting expensive existing or potential new storage space. Also inventory holding is reduced if suppliers deliver product when it is needed. Reducing inventory also means reduced handling and likelihood of theft or damage to the product. The potential also exists for decreasing lead times to facilities as the stock only has to go from the supplier to the facility and not through NMS. For facilities to take direct delivery, they need adequate storage capacity and staff to handle shipments. This also means strong coordination between NMS, the supplier, and the facility to ensure that staff are available to manage the delivery when it arrives. Increase product costs will probably result from the supplier having to deliver to more units than if they were delivering to the NMS central store. The increased product costs will be offset by less product to distribute, so that cost will be reduced proportionally. The sum of all the reductions are seen in Tables 31 and 32.

The examples below give an indication of the cost savings that could result from direct delivery of one product group—infusions. The warehouse cost savings is based on the amount of space that could be saved for these commodities which is linked to all costs associated with storage. The costs were taken either from the NMS salary report or the 2008/09 annual report. The distribution cost was based on 5% of the product costs, which was shown in Table 25.

Table 31: Cost savings for saline infusion direct delivery

Impact	Cost assumption	Annualized Cost
Additional product costs	10% of product cost	UGX 63 million
Warehouse cost savings	7% of personnel, rent, consumables, maintenance	UGX 70 million
Distribution cost savings	5% of product cost	UGX 31 million
Potential net savings		UGX 38 million

Table 32: Cost savings for all infusions direct delivery

Impact	Cost assumption	Annualized Cost
Additional product costs	15% of product cost	UGX 131 million
Warehouse cost savings	15% of personnel, rent consumables, maintenance	UGX 150 million
Distribution saving costs	5% of product cost	UGX 44 million
Potential net savings		UGX 63 million

It would be prudent to start with local suppliers of bulk product because they will be able to respond quickly and hopefully be more amenable to direct deliveries. Non-Ugandan suppliers will have more of a challenge to arrange direct deliveries unless they have local representatives or a repacking organization that can be a coordinating point for NMS regarding deliveries.

Contracting (outsourcing) distribution services

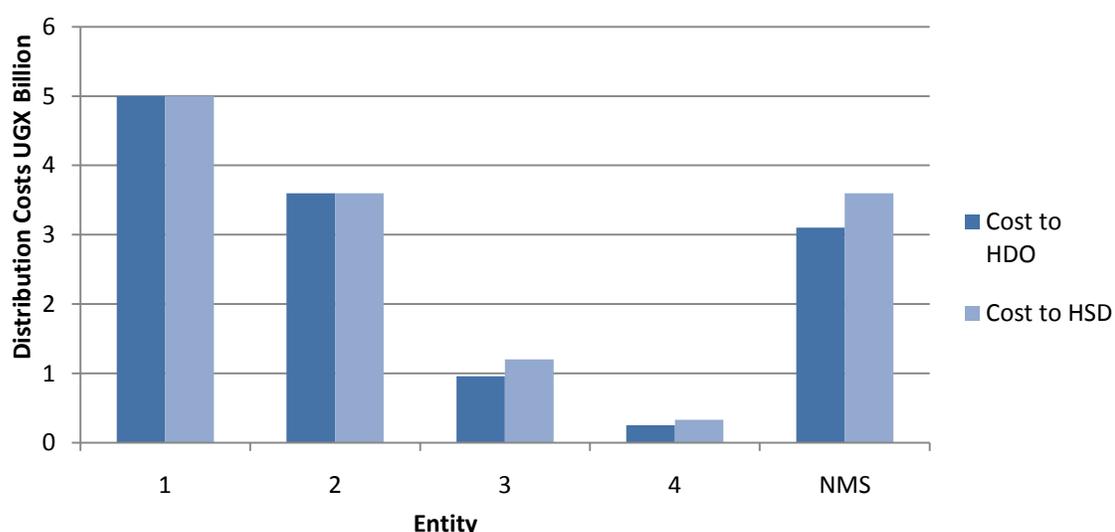
One of the biggest operating costs for NMS is distribution (UGX 3.1 billion); therefore, looking at alternatives to save money, including outsourcing, makes sense. Ugandan companies were asked to provide quotes for deliveries from NMS to district health offices and to health sub-districts. The data given to the companies for the quotes was destination, mileage, number of cartons, and average weight of the consignment (average weight was calculated by taking a delivery to one district and weighing each carton). Because full distances for the health sub-districts were not known, we used district figures plus 30%.

This data was a quick response for a given set of data, so a tender would require more precise distance information. None of the companies could give any prices to the facility level although they were given the names and care level of each. They all said they needed more data. Table 33 illustrates the profiles of the three most competitive companies.

Table 33: Distribution company comparisons

	Company A	Company B	Company C
Type of business	Private distribution company	Private distribution company	Private distribution company
Years of operation in Uganda	13 years	15 years	20 years
Vehicle profile	Own transport; no outsourcing	14 trucks, 15 motorbikes; no outsourcing	7 trucks; no outsourcing
Has insurance to cover transported goods?	Yes	Yes	Yes
Regional coverage	Kenya, Tanzania, Burundi, Rwanda	Kenya, Tanzania, Burundi, Rwanda	No
Cold chain experience	No	Yes	Yes
Willingness to contract with NMS for supply chain services?	Yes	Yes	Yes
Geographic coverage for delivery sites	40 districts	All districts	All districts
Information system	Proof of delivery manual	Proof of delivery and web-based tracking	Proof of delivery manual

Figure 55 shows costs based on responses from four companies; two of the companies were lower than NMS for distribution to both the district and health sub-districts.

Figure 55: Comparison of NMS distribution costs with the private sector

Compi:

system) still resulted in significant savings. NMS would need to manage this contract, facilitate loading, and follow up with facilities, hence the reduced budget of UGX 1.3 billion. Table 34 shows the potential to save UGX 1.8 billion through a contract between NMS and the private sector carrier.

Table 34: Distribution option costs

	Option 1		Option 2	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Option description	NMS to district health office	Outsource to district health office	NMS to health sub-district	Outsource to health sub-district
NMS cost (UGX billion)	3.1	1.3	3.6	1.7
Total	3.1	1.3	3.6	1.7

When subtracting UGX 1 billion from the income statement we see the results in Table 35 showing that with outsourcing, NMS does not lose money, but also has reserves of UGX 0.4 billion to recapitalize the business.

Table 35: Implication of distribution savings to NMS bottom line (UGX)

Cost component	Scenario 1	Scenario 2
Stock Value	80,252	80,252
Income	8,407	8,407
Personnel	296	296
Distribution	3,127	1,327
Storage	4,794	4,794
Procurement	1,557	1,557

Cost component	Scenario 1	Scenario 2
Total Costs	9,774	7,974
Net Profit/(Loss)	(1,367)	433
%	-16%	5%

All the estimates have looked at distribution to the district health office or the health sub-district, but not to the facilities. This is still the responsibility of the district. Currently, about 20% of districts distribute to some health facilities, and half of health sub-districts distribute to some health facilities. Some facilities (25% of HCII and HCII) collect their items from either the district health office or the health sub-district¹¹⁹

With the information available, it is very difficult to estimate any cost benefits that might be generated by outsourcing delivery to facilities. However, by mapping the facilities and then getting accurate distances, the private sector should be able to provide a quote for this activity also. Currently, NMS has neither the vehicle capacity nor the correct vehicle mix because many health centers are only accessible by small vehicles or motorbikes.

SURE carried out a survey in 2010 to understand what the districts perceive as problems with distribution to facilities. The primary three answers from 66 of the 80 districts were—

- Lack of funds for fuel
- No or little maintenance for existing vehicles
- Lack of a viable vehicle for distribution

However, a different SURE survey of six districts revealed that districts do have a UGX 9 million budget for fuel, vehicle maintenance, and tires. In addition, facilities are paying UGX 30,000 per trip to collect their medicines, primarily on public transport, so they appear to have funds for distribution.

Options include setting up a distribution system in which either NMS or a third party would deliver to districts or health sub-districts, then the district or sub-district could deliver to facilities using their own transport or outsource to a local company. However, the associated costs with options need to be investigated and costed against NMS or an outsource option delivering directly.

Provide vehicles to the districts

If one of the options was to supply 45 districts (the number in the SURE survey who reported a lack of a vehicle for distribution), what would it cost? The estimated cost of a four-ton truck with a six-pallet capacity is UGX 80 million, and Table 36 summarizes its running costs.

As mentioned above, districts indicated that they have a UGX 9 million annual budget for vehicle maintenance. Based on the estimates in Table 36 of about UGX 9 million for yearly maintenance, the districts could potentially afford to manage a vehicle. Remaining questions would include who would cover the cost of the vehicles (UGX 3.6 billion each) and the capacity of districts to manage the budget distribution scheme.

¹¹⁹ Copeland, Rebecca, Cecilia Sewagudde, and Briton Bieze. 2006. *Uganda Health Facilities Survey 2006: Performance of HIV/AIDS and Family Planning Commodity Logistics Systems*. Arlington, Va.: DELIVER, for the U.S. Agency for International Development.

Table 36: Running costs

Daily Standing Cost Per Vehicle	
Vehicle Type	Isuzu NPR 400 SWB
Vehicle capacity	4 tons
Pallet capacity	6
Capital cost (UGX)	80,000,000
Depreciation rate should also be considered (not calculated)	-
Fuel Calculations	
Fuel (UGX/Liter)	2200
Liters/100kms	15
Kms/liter	6.66
Cost/km (UGX)	330
Variable Costs	
Insurance - Annual	1,200,000
Tires (UGX/Km)	80
Maintenance (UGX/Km)	300
Fuel (UGX/Km)	330
Average trip (Km)	30
Standard off-road days/year	118
Annual Km	7410
Average number of days per trip	1
Average calls per day	1
Driver's hourly cost including per diem	1,256
Drivers weekly shift hours	40
Rate per vehicle day	10,050
Annual Costs	
Insurance	1,200,000
Tires	592,800
Maintenance	2,223,000
Fuel	2,445,300
Drivers	2,613,000
Depreciation	—
Annual cost/vehicle	9,074,100
Annual costs for all districts	408,334,500
Daily	36,737.25

Conclusion

As we look at the improvements that can be made at NMS, clearly, implementing partners' operations can be improved, also. As NMS improves its efficiency, implementing partners have a chance to harmonize their supply chains. Although third-party logistics and direct delivery may not suit everyone, it is a step toward linking all supply chains and providing critical mass to deliver cost savings across all levels.

In the discussion of outsourcing to a third party, the NMS board expressed the importance of NMS's self-reliance and maintaining control over distribution. There was discussion of establishing a separate

company within NMS to take responsibility for distribution services; however, a policy of self-reliance does not prohibit an exploration of involving the private sector in medicines distribution within the districts. If contracting is considered, it would be important for PPDA to allow longer term contracts, such as three years and that in house distribution management be strengthened. Form our analysis “to the door” delivery by third party distributors should be considered.

5. ANNEXES

- 5.1 Conference program
- 5.2 Selected EMHS items for the price study
- 5.3 Warehouse rating assessment
- 5.4 Speech by Minister for Health, Hon Stephen Mallinga
- 5.5 Speech by USAID/Uganda Deputy Director, John Winfield
- 5.6 List of conference participants
- 5.7 Key findings from the 2006/07 National Health Account estimation.

ANNEX 5.1: CONFERENCE PROGRAM**PROGRAM FOR THE DISSEMINATION OF THE PHARMACEUTICAL SECTOR POLICY
OPTIONS ANALYSIS 15–16 APRIL 2010**

Thursday 15th April		Resource person	Chair
8:30 – 9:00	Registration		
9:00 – 9:15	Welcome and objectives of the conference	Dr Nathan - Kenya-Mugisha	DGHS
9.15 – 9.30	Pharmaceutical sector of Uganda	Martin Oteba	DGHS
9:30 – 9:45	Brief on the SURE programme	Birna Trap	DGHS
9:45 – 10:00	Opening remarks by USAID official	John N Winfield, USAID/Uganda, Deputy Director	DGHS
10:00 – 10:15	Official opening	Minister of Health, Hon. Steven Mallinga	DGHS
10:15 – 10.30	The Policy Option Analysis and experiences from other countries	David Lee	DGHS
10:30 – 11:00	Tea Break		
11:00 – 17:00	THEME: WHAT IS THE PRESENT SITUATION IN THE PUBLIC PHARMACEUTICAL SECTOR AND HOW HAS IT DEVELOPED		
11:00 – 11:20	Procurement policies and practices in sub- Saharan Africa	Graham Dukes	Graham Dukes
11:20 – 11:40	What are the lessons learned	Moses Muwonge	
	Situation analysis		
11:40 – 12:00	<ul style="list-style-type: none"> • The system and flows 	Saul Kidde	
12:00 – 12:20	<ul style="list-style-type: none"> • Vote 116 and Funding, 	Pito Jjemba	
12:20 – 12:40	<ul style="list-style-type: none"> • Funding gap 	Pito Jjemba	
12:40 – 13:00	Clarifications		
13:00 – 14:00	Lunch Break		
14:00 – 14:20	<ul style="list-style-type: none"> • NMS/JMS 	Simon Cole	
14:20 – 14:40	<ul style="list-style-type: none"> • Procurement & storage 	Simon Cole	
14:40 – 15:00	<ul style="list-style-type: none"> • Distribution Situation Analysis 	Simon Cole	
15:00 – 15:30	Clarifications		
15:30 – 16:00	Tea Break		
16:00 – 16:15	<ul style="list-style-type: none"> • Prices 	Belinda Blick	
16:15 – 16:30	<ul style="list-style-type: none"> • Initiatives to expand availability and affordability 	Khalid Mohammed	
16:30 – 16:45	Clarifications		Graham Dukes
16:45 – 17:00	Closing of the day		

Friday 16th April		Resource person	Chair
8:30 – 9:00	Registration		
THEME: OPTIONS TO STRENGTHEN THE SUPPLY CHAIN SET UP IN UGANDA.			
9:00 – 10:00	Improved Supply chain options: <ul style="list-style-type: none"> • Options for improving supply chain • Quantification unit • NMS • Procurement/Storage • Distribution 	David Lee Saul Kidde Simon Cole Simon Cole Simon Cole	Graham dukes
10:00 – 10:30	Tea Break		
10:30 – 11:00	Improving availability of affordable medicines options Mobilizing resources	Birna Trap	Graham Dukes
11:00 – 12:00	Discussion in groups	Martin Oteba	Graham Dukes
12:00 – 13:00	Report back from the groups / discussion		Graham Dukes
13:00 – 14:00	Lunch Break		
14:00 – 14:30	Summary and way forward	Graham Dukes/ David Lee	
14:30 – 15:00	Closing remarks Closing Remarks Ministry of Health	Martin Oteba	
15:00 – 15:30	Tea		

ANNEX 5.2: EMHS ITEMS FOR PRICE STUDY

No	Generic Name, Dosage Form, Strength	VEN	Most common Pack Size: Units/pack
1	Acyclovir Tab 200mg	V	100
2	Albendazole Tab 400mg	E	500
3	Amitriptyline 25mg Tab	E	1000
4	Amoxicillin Tab/Capsule 250mg	V	1000
5	Aspirin Tab 300mg	V	1000
6	Bendrofluazide 5mg Tab	E	1000
7	Carbamazepine 200mg Tab	E	1000
8	Ceftriaxone sodium Inj(PFR) 1gm	V	1
9	Chloramphenicol Caps 250 mg	V	1000
10	Chlorphenamine Tab 4mg	E	1000
11	Ciprofloxacin Tab 500mg	V	100
12	Cloxacillin Caps 250mg	V	100
13	Cotrimoxazole 400+80mg scored Tab	V	1000
14	Diazepam Tab 5mg	V	1000
15	Diclofenac Sodium Tab 50mg enteric coated	E	100
16	Doxycycline HCl Tab 100mg	V	1000
17	Erythromycin stearate Tab 250mg	V	1000
18	Ferrous sulphate (65mg iron)+folic acid Tab 0.25-0.4mg	E	1000
19	Furosemide Inj 20mg/2ml	V	100
20	Gentamycine Inj 80mg/2ml	V	100
21	Glibenclamide Tab 5mg	V	100
22	Ibuprofen tab 200mg		1000
23	Lidocaine Inj 2% 20ml vial	E	1
24	Magnesium Trisilicate comp 250+120mg Tab	N	1000
25	Metronidazole Inf 5mg/ml 100ml	V	1
26	Metronidazole Tab 200mg	V	1000
27	Nifedipine retard tab 20mg	V	100
28	Omeprazole Cap 20mg	E	100
29	Oral rehydration salts for 1Lt, 27.9g	V	25
30	Oxytocin Inj 10IU 1ml	V	100
31	Paracetamol Tab 500mg, scored	E	1000
32	Penicillin, procaine 3MU+ benzyl 1MU	V	10
33	Phenytoin sodium Tab 100mg, Scored	E	1000
34	Prednisolone tab 5mg	V	1000
35	Propranolol Tab 40mg, scored	V	1000
36	Quinine di-HCl Inj 600mg/2ml	V	100
37	Quinine tab 300mg		1000
38	Ranitidine tab 150mg	E	1000
39	Salbutamol Inhaler 0.1mg(100mcg)/dose 200doses	V	1
40	Sulfadoxine+Pyrimethine Tab 500mg+25mg	E	1000
41	Tetracycline Eye Ointment 1% tube 3.5g	V	10
42	Water for injection 10ml	V	100
43	Plaster adhesive zinc oxide, 75mm x 5m	E	1
44	Bandage cotton W.O.W. hydrophilic 75mm x 4m roll	E	10
45	Cotton Wool 500g roll	V	1
46	Gloves examin. non-sterile disposable pair	E	50
47	Gloves surgical, size 7.5 sterile, disposable pair	V	50
48	Gloves surgical size 8 sterile disposable pair	E	50
49	AD Syringes 2ml+ Needle Disp. Detached 23G X 1" with re-use	V	100
50	AD Syringes 5ml+ Needle Disp. Detached 21G X1.5"with re-use	V	100
51	AD Syringes 10ml+ Needle Disp. Detached 21G X1.5"with re-	N	100

ANNEX 5.3: WAREHOUSE RATING ASSESSMENT

Warehouse Rating Assessment for Uganda/Rwanda/Mozambique at End of 2009								
						Bronze	Basic	Bronze
							Adil	Main
Description	Platinum	GOLD	SILVER	BRONZE	BASIC	NMS	CMAM	CAMERWA
Site Master Plan	1	1	1					
Scaled Floor Plan	1	1						
Pest control Register (mapping and application)	1	1	1	1				
Pest control Contract	1	1	1					
Temperature Control register(mapping and application)	1	1						1
Racking Layout plan	1	1	1	1				
Racking design specifications	1							1
Formal Cleaning Register	1	1						
Outside yard clean & tidy	1	1	1	1	1	1		
All surfaces freshly painted	1	1	1					
Material handling equipment	1	1				1	1	1
maintenance plans	1	1	1	1		1		
Solid wood doors on outer	1	1	1	1	1	1	1	
Service Level Agreements	1	1	1					
Structure - Org Charts	1	1	1	1		1		1
Job Functions	1	1	1					
Job Descriptions	1	1	<u>1</u>					1
Process Maps	1	1						
SOPS - Warehouse	1	1	<u>1</u>	1			1	
Stock control - batch separated	1	1	<u>1</u>	1	1	1	1	1
Air curtains/ strip curtains on all outer doors	1							
<u>Description</u>								
Smooth / level Concrete Floor	1	1	<u>1</u>			1		
Coldroom/fridge	1	1	1	1	1	1		1
Condensers/Compressors	1	1				1		
Temperature monitoring	1	1						1
Temperature recording	1	1	1	1				
Deviation monitoring and alarm	1	1						
Racking in Coldstore	1	1						
Warehouse cooling system	1	1	1					
Cooling system maintenance	1	1	1					

Warehouse Rating Assessment for Uganda/Rwanda/Mozambique at End of 2009								
						Bronze	Basic	Bronze
							Adil	Main
Description	Platinum	GOLD	SILVER	BRONZE	BASIC	NMS	CMAM	CAMERWA
plan								
Racking	1	1	1			1		
Racking Map Locations / Floor plan	1	1						
Rack labeled	1	1	1			1		
Condition of roof	1	1	1	1	1		1	
Quarantine Control Area	1	1	1	1		1	1	
Separate Receiving/Despatch area	1	1	1	1	1	1		
Battery charging area	1	1				1		
Change room	1					1		
Toilets	1	1	1	1	1	1	1	
Roller doors all operational	1	1	1					1
Optimal Lighting in warehouse	1	1						
Generator	1	1	1	1		1		1
UPS	1	1						1
Description								
Operating Locks on all doors	1	1	1	1	1	1	1	1
Duplicate Key control book	1	1						
CCTV and monitoring	1							
Entrance control	1	1	1	1		1	1	1
Entrance registration of movement	1	1						
Perimeter wall / fencing	1	1	1	1	1	1		1
Perimeter electric fence protection	1							
Reception biometric control	1							
Turnstall to warehouse	1							
Card access control	1							
Perimeter patrols	1	1						
Security Armed response	1	1	1			1		1
Staff ID Tags	1	1				1		1
Contact Lists	1	1	1	1				
Intruder alarm and monitoring	1							
Windows - Burglar bars	1	1	1	1				
Doors - Outer solid wood or steel	1	1	1	1		1	1	1
Description								
Fridge and operating temperatures	1	1						

Warehouse Rating Assessment for Uganda/Rwanda/Mozambique at End of 2009								
						Bronze	Basic	Bronze
							Adil	Main
Description	Platinum	GOLD	SILVER	BRONZE	BASIC	NMS	CMAM	CAMERWA
Corporate	1	1				1		
All regulatory	1	1	1					
Rack numbering	1	1	1			1		
Description								
Operational Office lighting & plugs	1	1	1	1		1	1	1
Network points	1	1				1		1
LAN	1	1				1		1
MIS Including stock management	1	1	1			1	1	1
Basic Stock Control system Bin Card/t-card					1			
Computers	1	1	1			1	1	
Terminals	1	1	1			1	1	1
Scanners	1					1		1
Printers	1	1	1			1	1	1
Photocopier	1	1				1	1	1
Fax and fax lines	1	1				1		1
Telephones	1	1	1	1	1	1		1
Furniture	1	1	1	1	1	1	1	1
Description								
Registered facility with Authorities	1	1	1	1		1	1	1
Register of SOP and other training	1	1						
Temperature Loggers	1	1	1	1				
Temperature mapping	1							
Temperature validation	1							
Alarm power interruption	1	1						
New SOP's	1	1	1					
Electronic Monitoring Units for critical failure	1	1						
Inhouse Pharmacist	1	1	1	1		1		1
Description								
Fire Certification	1	1	1					
Smoke detection units and monitoring	1	1	1					
Hose-reels and fire extinguishers	1	1	1	1		1		
Spill kit	1	1						
Fire evacuation plan	1	1	1					
General evacuation	1	1	1					
Assembly points	1	1	1					
Fire fighting teams	1	1						
Safety reps	1	1						

Warehouse Rating Assessment for Uganda/Rwanda/Mozambique at End of 2009								
						Bronze	Basic	Bronze
							Adil	Main
Description	Platinum	GOLD	SILVER	BRONZE	BASIC	NMS	CMAM	CAMERWA
First aiders	1	1	1	1	1			
First Aid kits	1	1	1					
Warehouse layout plan of fire fighting equipment	1							
Licensed Material handling drivers	1	1	1					1
Accident / incident reporting	1	1	1					
	99	86	57	29	13	40	18	31
	Platinum	GOLD	SILVER	BRONZE	BASIC	Bronze	Basic	Bronze

ANNEX 5.4: SPEECH BY HONORABLE STEPHEN MALLINGA, MINISTER FOR HEALTH

More than thirty years have gone by since the Essential Medicines concept was first proclaimed by the World Health Organization as a fundamental element in health care.

For those of us who were not in the middle of health policy discussions three decades ago, the significance of that event may be a little difficult to understand. However, you will agree with me, that no-one after all, has ever doubted that medicines are the most important single tool that the clinician or indeed any health provider has at his/her disposal for the treatment of patients. I commend the WHO for its foresightedness in making the first step in making available to countries a publication of a list of medicines which were to be recognized as “essential” despite some resistance from some circles. You may recall that at the time, very virulent debate took place with some voices sharply criticizing the World Health Organization for its views. Some critics even asserted that the Organization was trying to stop progress in research, or to force the world’s patients into relying on outdated remedies. This initially sharply divided the world into two camps. While in the wealthier nations one might find 30,000 or 50,000 medicines on sale, with new products being introduced (and others disappearing) from the market almost every week, health providers were confused and patients even more so.

In the developing world, on the other hand, few medicines of any sort were to be found, and whole populations were deprived of the medicines that they needed to treat even serious diseases.

What the World Health Organization had come to realize, after studying the matter carefully and applying some plain common sense, was that the bulk of the world’s needs for day-to-day treatment could be met by providing a relatively small range of medicines – with the initial list comprising of only 230 items. Many of such medicines had been in use for years and they were therefore well-known, trusted and availed through multiple production sites globally. Ladies and Gentlemen, from the above I may be giving an impression of a problem solved.

However, far from reality, many a country including Uganda continue to grapple with challenges related to availability and access to basic essential medicines. Only about 26% of our public health facilities were able to get through the last year without a stock out of any of the six sector tracer medicines.

A number of factors are responsible for such low availability levels. The factors range from inadequate financing for medicines; low levels of appropriately skilled Human Resources for Health in the health facilities and more especially low management capabilities at the different levels.

One only needs to look back to the end of the 1980’s when the shortage of medicines here in Uganda was nothing short of calamitous. The photographs in the newspapers of those days

remind us of the pre-packaged boxes of essential medicines, sent by our good friends from Denmark's Aid Agency "Danida" and distributed to health centers around the country. Then, one, two or three such boxes would meet most medicines needs of a health centre for about three months, until the next box arrived. I want to pay tribute to the Danish people for this support.

Although we have come a long way since those days, through the spirit of partnerships, we continue to rely on international support. Despite the increased proportion of funding from our own local sources for medicines and other supplies, we still fall short of resources and welcome our partners to join hands with us in making the situation even better. As you know, we seem to be racing against time as the burden of disease has actually increased and even more complicated by the continued need to scale up response to HIV/AIDS.

I am, therefore, glad to note that the US Government despite generous support under PEPFAR has through the USAID found it worthwhile to further join hands with us in ensuring that the necessary capacity and capabilities for the management of medicines and health supplies in this country is built. I am informed that the new programme, Securing Ugandans' Right to Essential Medicines (SURE) provides an opportunity to turn round the landscape in this area that continues to elude our health system.

I call upon the Chief of party to work very closely with our experts under the coordination of the Pharmacy Division at the ministry in moving forward this noble cause.. We all appreciate that medicines are complex items, and in a many instance some of them are unavoidably costly. There needs to be better means of determining precisely what we need and in which quantities, and we need to use our medicines wisely. As new facts become known about medicines, we need to provide that information to every prescriber.

Ladies and gentlemen, we are prepared to welcome advice on any changes necessary provided that they are aimed at improving and strengthening our health care delivery. We shall in return expect transparency and mutual trust and commitment from our partners. This is all the more reason; we welcomed the SURE programme to which the Policy Option Analysis that is now under way is, but a part. I urge every one of us, particularly the health programme managers, the Pharmacy Division, the National Drug Authority and the National Medical Stores to pay particular attention to the results of the analysis that are now ready to be presented to us and advise accordingly.

We need to take good note of the ideas that we are due to hear today and raise our own where we believe that we can do better.

It is now my pleasure and honor to declare this Options Analysis Conference open, and I wish you every success in the implementation of the SURE programme.
For God and My country

ANNEX 5.5: SPEECH BY USAID/UGANDA DEPUTY DIRECTOR, JOHN WINFIELD

There are many sound reasons for any country to take a fresh look in 2010 at the way in which its population is supplied with medicines. It has been recognized for fifty years and more that medicines and vaccines are at the very heart of health care and that every person has a right to have access to them. Respecting that right is not just a matter of ethics or charitable intent; the availability of proper treatment to prevent and relieve disease is an essential element in a nation's ability to grow and develop. At the same time it has become increasingly clear that the resources available to achieve this goal are not unlimited. Even the wealthiest countries have found themselves obliged to consider afresh how their resources for health care can best be used. On the one hand medicines offer tremendous potential form for benefit, but the complex system of supply that is needed to keep medicines flowing also presents too many opportunities for waste and even misuse.

Twenty years have gone by since a major international effort swung into action to support and develop drug policies in Uganda. One milepost on the road was the creation of the National Drug Policy and Authority Statute in 1993 and the creation at the same time of the National Medical Stores; another, at the very start, was the provision of donor-funded drug kits, distributed nationally to meet the most acute needs. It was only to be expected that one would meet setbacks on the way; any system capable of ensuring that the right medicines are selected and that they are adequately funded and then efficiently procured, stored, distributed and used is inevitably complex; a great many people need to be trained both technically and ethically if the system is to operate as it should. But there were also new obstacles to be surmounted that had hardly been foreseen at the start, notably the massive onslaught of HIV/AIDS infection and of drug resistant forms of malaria and tuberculosis, demanding greater resources than ever before.

In 2009, therefore, the US Agency for International Development awarded Management Sciences for Health a cooperative agreement to the tune of \$39 million, to run over five years, to implement the program known as SURE - "Securing Ugandans' Right to Essential Medicines." Such a program must necessarily begin by examining the system as it operates at the moment and determining to what it needs to be strengthened or modified. This "Policy Options Analysis" has been ongoing since October last year, and at this Conference we shall consider its findings. In some respects we shall be able to point to new or modified initiatives that are called for if the system is to serve Uganda well. In other respects we shall only be able to define a number of options for action that need to be further studied during the coming months before we can all agree on how best to move ahead. And all the time we shall need to keep our eyes and ears open for change around us: public health presents a constantly changing challenge, and the solutions that seem preferable today may be less appropriate tomorrow; but there will no doubt also be new solutions on the horizon – novel medicines, vaccines and ways of working that may offer better and perhaps more economical approaches to the ideal of health.

Every country is in some respects unique where health is concerned, but no country has a monopoly of wisdom. The nations of Sub-Saharan Africa have in the last generation found

numerous ways in which the experience of one country can benefit another – sometimes quite informally but also within such structures as the East African Union. Let me add however that over two decades Uganda has built up an impressive human potential of its own in this field. In that respect the situation is encouragingly different from that which existed when aid to Uganda began and when, as some who experienced the problems of that time now recall, Uganda was to some extent inevitably a passive recipient of external support. Ugandans are playing a majority role in the present Policy Options Analysis and will provide both the energy and the expertise needed to identify the steps that need to be taken and to take them, boldly and efficiently.

This Conference, then, will be a crucial step on the road to building a better system of drug access in Uganda. A number of experts are with us to present their findings, impressions and ideas. But they – and those of us from USAID – are also here to listen to all of you. This will be an opportunity for each of you to present your own experiences and proposals; if you do not find the opportunity to do that during the sessions, then come to us in the days and weeks that follow. Donors, international program and partners are no more than that; the ultimate success of a program to ensure access to medicines for every Ugandan will depend on the continuation and constant development of what has already been achieved by Uganda itself. Those of us in USAID, and I know that I speak here for all donor partners, congratulate you on what has been achieved so far and wish you every success in the decades to come.

ANNEX 5.6: LIST OF CONFERENCE PARTICIPANTS

Pharmaceutical Policy Options Analysis Conference participants			
Name	Designation	Organization	Email
Aben Kisoje	Media -photographer	New Vision	akisoge@newvision.co.ug
Aidah Namukula R	Procurement and logistics officer	MoH	aidarayaan@yahoo.com
Alfred Acanga (Dr.)	Principal Medical Officer	Apac Hospital	acangaalfred@yahoo.co.uk
Alice L. Veronica	Clinical Pharmacist	Gulu University	lamalice@yahoo.com
Allen Asimwe	Director	AVID Development	allen.asimwe@gmail.com
Allen Mukhwana	ATIC Team leader	IDI	amukhwana@idi.co.ug
Andrew Cohen Nsubuga	Manager Operations	JMS	andrew@jms.co.ug
Anna Nakanwagi (Dr.)	COP TBCAP		ananwagi@theunion.org
Anna Spindler	Supply Manager	UNICEF	aspindler@unicef.org
Apollo Muhairwe	Executive Secretary/Registrar	NDA	apollo8000x@yahoo.com
Arnold Kabbale	Pharmacist - intern	Mulago hospital	arnold.kabbale@gmail.com
Atanasius Kakwemeire	Supply chain technical advisor	CRS/AIDS Relief	akakwemeire@ug.earo.crs.org
Aziz Maija	SPA	MSH	amaija@msh.org
Beckice Gohag	MO HIV	WHO	
Belinda Blick	M&E/LMIS	SURE	bblick@msh.org
Benon Wanume	Medical Superintendent	Mbale hospital	wanumeb@hotmail.com
Bhaivesh Ghodaswen	Business development advisor	ABACUS	bdmngo@kiboko.co.ug
Birna Trap	Chief of Party	SURE	btrap@msh.org
Blair Mureebe	District Planner	Buliisa district	bmureeba@yahoo.com
Bosco Okello	Senior Pharmacist	Mulago hospital	borkjpk@yahoo.co.uk
C E Ndhlovu	STTC	SURE	ratizw@gmail.com
Cathy S. Nabukeera	Pharmacist - intern	Mulago hospital	ncathys@yahoo.com
Celestino Obua (Dr.)	Deputy Dean	Makerere university	
Charles Bizi	Driver	Mayuge district	bizi@yahoo.com
Charles Sebikali	DADI	Mayuge district	c.sebikali@yahoo.com
Chris Sembagare	Regional Pharmaceutical coordinator	Sembabule district	medsembabule@yahoo.com
Christine Mwangi	Lab Advisor	CDC	mwangic@ug.cdc.gov
Christopher Alumai	Driver	Apac Hospital	0772 576121
Clare Asimwe	A. consultant	JICA Uganda	claraasimwe@yahoo.com
Claudia Hudspeth	Chief Health	UNICER	chudspeth@unicef.org
David Lee	TSQ	MSH	dlee@msh.org
Denis Kibira	Medicines Advisor	HEPS Uganda	heps@utlonline.co.ug
Diana Atwine (Dr.)	Director	Drug Monitoring Unit	atwinedi@yahoo.com
Dithan Kiragga	DCOP	HIPS	dkiragga@emg-hips.com
Dorothy Adeke	LM	JMS /MoH	dorothy_ade@yahoo.com
Dr. Mulline	MoH	MoH	
Drake Mugabe (Dr.)	SMO - NTLP	MoH	
Eddie Mukooyo (Dr.)	ACHS/Re	MoH	emukooyo@yahoo.com
Edith N Kakuba	Finance	NMS	ekakuba@natmedstores.org
Emily Katarikawe	MD	UHMG	ekatarikawe@uhmg.org
Emuron Faustus	DHS driver	Luwero district	0701 851225
Eric Nabuguzi	Logistics Coordinator	MSH/SURE	ejemera@msh.org
Esa Weere	Driver	Butaleja district	0772 453837
Esther Nakkazi	Science reporter	The East African	
Eunice Nalubanga	Journalist	KFM	nalubangaeunice@yahoo.com
Evan Klaus	Program Analyst	CHAI	eklaus@clintonfoundation.org
Fitti Weiglass	Software development coordinator	CDC	fgleug.cdc.gov

Pharmaceutical Policy Options Analysis Conference participants			
Name	Designation	Organization	Email
Flavia Nalubega	Monitor/media	Monitor	flavianalubega@yahoo.com
Freddie Kasirivu	Media	Star FM	eddikasirivu@yahoo.com
Geoffrey Nalima	Marketing Manager	Quality chemicals	nalimag@qcil.co.ug
Geofrey Owora	Driver	MoH	0772 847104
Gideon Kisuule Musoke	Principal Pharmacist	MoH	gideonkisuule@yahoo.co.uk
Grace N. Sekabira	Pharmacist	Malaria Consortium	
Graham M N Dukes	STTA/Euro Health Group	SURE	mngdukes@gmail.com
Gune Dissanayake	Malaria advisor	USAID	gdissanayake@usaid.gov
Helen Ndagije	Head DID	NDA	helenbyomire@yahoo.co.uk
Ibrahim Amin	Driver	Mulago hospital	0772 255610
Isa Mayanja	Ass General Manager	Sino Africa medicines	mayanjaisa@yahoo.co.uk
Isaac Ezati (Dr.)	Deputy Director	Mulago hospital	iezaati@yahoo.com
Jacinta Sabiiti (Dr.)	SMO UNEPI	MoH	sabiiti_jacinta@yahoo.com
Jackie Idusso	coordinator	META	jackie.idusso@gmail.com
Jackson Henry Ogwal	Pharmacist	NUMAT	hogwal@numatuganda.org
James W Tamale	Consultant	PSU/META	tjqnee@yahoo.co.uk
Jeannette Higham	Program Manager	EU delegation	jeannette.higham@ec.europa.eu
Jimmy Opio	General Manager	JMS	jimmyo@jms.co.ug
John Mbabazi	Driver	MoH UNEPI	0772 672959
Joseph MangUGXo	Logistics Advisor	STAR-E	jmangUGXo@msh.org
Joseph Mwoga	NPO	WHO	mwoga@yahoo.com
Julius N Kalamya	Public Health specialist	CDC	jnkalamya@ug.cdc.gov
K Hoppenworth	Pharmacist	EHG	khoppenworth@gmail.com
Kate Kikule	HDIS	NDA	katkikul@nda.org
Kevin Croke	Consultant	Johns Hopkins	kevincroke@gmail.com
Khalid Mohammed	DSS	SURE	mkhalid@msh.org
Kinny Nayer	Managing Director	Surghipharm	kinny@surghipharm.co.ug
Kintu C	Driver	Jinja district	0772 395168
Kuteesa Bisaso	Pharmacist	Mulago hospital	kutusa@yahoo.com
Lali Ziras William	PO Lab QA	CPHL MoH	lwzlili@gmail.com
Lawrence Mumbe	PO logistics	MoH/ACP	lawrenceug@gmail.com
Lawrence Were	Logistics Expert	SURE	pharmacist368ug@yahoo.com
Loi Gwoyita	Supply systems change officer	SURE	lgwoita@msh.org
Luc Geysels (Dr.)	Health sector advisor	BTC	luc.geysels@btcctb.org
Martin Oteba	Ass. Commissioner, Pharmacy Division	MoH	orukan33@hotmail.com
Mary Namubiru (Dr.)	T/manager	EGPAF	marynamubiru@yahoo.co.uk
Micheal Ojja	PO	ADLS	
Morris Okumu	Pharmacist	Axios	morriokumu@gmail.com
Morris Seru	Pharmacist	MoH	morries2001@yahoo.com
Moses Bagyendera	LMIS	SURE	mbagyendera@msh.org
Moses Muwonge	STA	SURE	mmuwonge@samasha.com
Moses Ndhaye	Media	KFM	mndhaye@yahoo.co.uk
N Paranie Tharan	HSS Advisor	USAID	nparanietharan@usaid.gov
Neville Okuna O	Registrar Pharmacy Council	MoH	nokuna@yahoo.com
Okware Joseph (Dr.)	District Health Officer	Luwero district	jokware@yahoo.com
Park Song J		MPI SA	park@eth.mpg.de
Paul Hamilton	Chief of Party	STRIDES	pahamilton@msh.org
Paul Njala	Head of Stores	NMS	pnjala@natmedstores.org

Pharmaceutical Policy Options Analysis Conference participants			
Name	Designation	Organization	Email
Paul Waako	Lecturer	Makerere university	pwaako@chs.mak.ac.ug
Pemola Cris	Driver	MoH	0772 694719
Petra Schaefer	TA PMIS	SURE	
Petricle Mudoola	Vision Journalist	Vision voice	pmudoola@newvision.co.ug
Philip Byaruhanga (Dr.)	NMS board chairman	NMS	pbbyaruhanga@yahoo.com
Pito Jjemba	STA	SURE	ijjemba@yahoo.com
Polly Mugisha A	NPO	UNFPA	mugisha@unfpa.org
Prof. M A Otim	Medical doctor	NMS - board member	profotim@yahoo.com
Rebecca Copeland	Commodity Logistics Specialist	USAID	rcopeland@usaid.gov
Rehemah Nakawombe	New's Reported	UBC	
Richard Odoi Adome	Dean	Makerere University	rodoi@chs.muk.ac.ug
Richard Semakula	M&E	SURE	rsemakula@gmail.com
Richard Waya	District Chair Person	Butaleja district	rowaconsultants@yahoo.com
Rita Namagala	Nurse	Sino Africa medicines	
Robert Downing	Lab director	CDC	rqd6@cdc.gov
Robert Ngobi	Driver	MoH	0782 334394
Robert Okello	Driver	MoH	0754 888111
Rodney Tabaruka	Pharmacist - intern	Mulago hospital	tabarukatibaruha@gmail.com
Romano Fernades	COP	AFFORD	romano@umhg.org
Ronald Businge	Driver	Buliisa district	0777 319185
Rosette Mutambi	ED	HEPS Uganda	heps@utlonline.co.ug
Said Karama (Dr.)	Com. Coordinator	UMMIB	skarama@iman-uganda.org
Samuel Omalla	DADI	Tororo district	samomalla@yahoo.com
Sarah Byakika (Dr.)	DHO	Jinja district	sarahbyakika@yahoo.com
Sarah Nakandi	Administrative coordinator	SURE	snakandi@msh.org
Saul Kidde	TA/SCO	SURE	skidde@msh.org
Seraphine Adibaku (Dr.)	District Health Officer	Moyo district	adibakus@gmail.com
Seyoum Dejene	Deputy team leader HIV/AIDS	USAID	sdejene@usaid.gov
Sharon Acen	Programme Assistant	MoH/ACP	sharonacen@yahoo.com
Simon Cole	STA	SURE	simon.cole@hotmail.com
Simon Omoding	Body guard	MoH	0772 380419
Solome Nampewo (Dr.)	National Program Manager	SIDA	
Sowedi Muyingo	Pharmacist	Medical Access	maul@infocom.co.ug
Stephen Kadde	Pharmacist	MSH/SURE	skadde@msh.org
Stephen Otage	Media - Journalist	Daily Monitor	sotage@monitor.co.ug
Taddeo Bwambale	Media	New Vision	tbwanbale@newvision.co.ug
Thomas Obua	Senior Pharmacist	MoH	obthoc@yahoo.com
Timothy Musila	Senior Health Planner	MoH	timothymusila@yahoo.co.uk
Tom Tenywa	Lab coordinator	ACP/MoH	0772 406280
Umaru Ssekabira (Dr.)	Deputy Head of training	IDI	ussekabira@idi.co.ug
Valerie Remedios	Pharm. Consultant	EHG	vremedios@ehg.dk
Vento Ogora Auma	Program Advisor	CDC	aumav@ug.cdc.gov
Victor Agaba	Consultant	AVID	victoragaba@gmail.com
Victoria Nakiganda	Pharmaceutical Field coordinator	SURE	vnakiganda@msh.org
Vivienne Mulema	Pharmacist	STAR EC	vivienne moi@yahoo.com
Warren Mukiza	Driver	Sembabule district	mkzwaren@yahoo.com
Wilson Nyegenye	Lab logistics advisor	CPHL/MoH	wilson.nyegenye@yahoo.com
Zainab Akol (Dr.)	Programme Manager	STD/ACP MoH	akolzainabdr@yahoo.co.uk

ANNEX 5.7: KEY FINDINGS FROM THE 2006/07 NATIONAL HEALTH ACCOUNT ESTIMATION.

Indicators	2006/07
Total population	28,119,159
Exchange rate US \$1 =	1,780
Total GDP	20,166,000,000,000
Total Government Expenditure	3,210,770,000,000
National Health Expenditure (NHE) UGX	1,651,454,651,286
National Health Expenditure (NHE) USD	\$ 927,783,512
NHE per capita UGX	58,731
NHE per capita USD	33
NHE as a % of GDP	8.2%
Government health expenditure as a % of total government expenditure	7.4%
Total Health Expenditure (excl. health care related) UGX	1,609,672,459,141
Total Health Expenditure (excl. health care related) USD	\$ 904,310,370
Financing sources as a % of NHE	
Central government	14.4%
Households	50.0%
Donors	35.1%
International NGOs	0.4%
Financing agent distribution as a % of NHE	
Public	27.0%
Private (incl. HH)	50.0%
NGOs	14.2%
Donors	8.8%
Provider distribution as a % of NHE	
Public providers	24.5%
Private providers	7.6%
NGO providers	6.9%
Private pharmacies/shops	29.5%
Provision of public health programs	20.8%
Provision of gov't health administration	2.4%
Institutions providing health care related services	2.5%
Other	5.7%
Function distribution as a % of NHE	
Inpatient curative care	10.8%
Outpatient curative care	28.1%
Pharmaceuticals	29.5%
Prevention and public health programs	22.6%
Government health administration	2.4%