Ministry of Health

Republic of Uganda

Annual Pharmaceutical Sector Performance Report

2013-2014

May 2015

FOREWORD

The 2013/2014 report for the pharmaceutical sector comes out at a time ahead of the 2015 deadline for the remaining implementing period for the NPSSP- II. As the report shows, the Uganda pharmaceutical sector has made considerable progress towards achieving its goal.

The report highlights achievement of four out of thirty two key pharmaceutical indicators, progress is on track for twenty indicators and the rest either not achieved or remain unreported. The number of areas where the progress is unreported hinders efforts to monitor and guide decision making. We hope that this report can provide a platform to address planning, realign strategies and policies to focus on priority areas, mobilize resources and efforts to accelerate progress and set new priorities to guide the remaining implementing period and the update of the national medicines policy in order to achieve the objectives by 2015 and forward.

The report comes at a time of the just concluded Uganda Pharmaceutical Sector Conference that discussed the status of Uganda's pharmaceutical sector and developed a set of recommendations and stakeholder consensus on sector's priorities to guide the Ministry of Health (MoH). We welcome this in regard to addressing different approaches that could lead the pharmaceutical sector in meeting its overarching goal of ensuring "the availability and accessibility at all times of adequate quantities of affordable, efficacious, safe and good quality essential medicines and health supplies to all people who need them in the fulfillment of the basic requirement for the delivery of the Uganda National Minimum Health Care Package."

Finally, I would like to congratulate the Pharmacy Division for their accomplishment of this work, the contribution of the health development partners who have supported the sector, the central ware houses, the schools of pharmacy, National Drug Authority, registrars of health professional councils, District Health officers, health workers, the dedicated staff of Pharmacy Division and everyone who has contributed to this report. I urge that for sector performance to be improved and sustained, all stakeholders should continue the engagement and utilize this information.

Dr. Aceng Jane Ruth
Director General of Health Service

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ACRONYMS

ACT	Artemisinin-based combination therapy
ADR	Adverse Drug Reactions
ARV	Antiretroviral
DHIS	District Health Information System
EMHS	Essential medicines and health supplies
EMHSLU	Essential medicines and health supplies list Uganda
GF	Global Fund
GH	General Hospital
GoU	Government of Uganda
HC	Health centre
HMIS	Health Management Information System
HSSIP	Health Sector Strategic Investment Plan
ITN	Insecticide treated nets
IRS	Indoor Residual Spraying
JMS	Joint Medical Store
MAUL	Medical Access Uganda Limited
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MOS	Months of stock
NDA	National Drug Authority
NDP	National Drug Policy
NGO	Nongovernmental Organization
NHP	National Health Policy
NMS	National Medical Stores
NMP	National Medicines Policy
NPSSP	National Pharmaceutical Sector Strategic Plan
NRH	National Referral Hospital
OI	Opportunistic infections
SCMS	Supply Chain Management Systems
PHP	Private Health Practitioners
PNFP	Private Not-For Profit
QCL	Quality Chemicals Limited
RRH	Regional Referral Hospital
SPARS	Supervision, Performance Assessment, and Recognition Strategy
STGs	Standard Treatment Guidelines
TB	Tuberculosis
UGX	Ugandan Shilling
URTI	Upper respiratory tract infection
USAID	United States Agency for International Development
USD	U.S. Dollar
WHO	World Health Organization

EXECUTIVE SUMMARY

SUMMARY ASSESSMENT OF 32 KEY PHARMACEUTICAL INDICATORS

The table below summarizes performance of the pharmaceutical sector as measured by progress on (31) selected indicators in financial year 2013/2014 compared to the previous two years and targets for 2014/2015 set in the five-year Ministry of Health National Pharmaceutical Sector Strategic Plan.

Table 1: Progress of Key Pharmaceutical Indicators

Key Pharmaceutical Indicators	Overall Progress	Baseline 2010/2011	Achievement 2012/2013	Achievement 2013/2014	Target 2014/2015
Average % availability of six tracer medicines measured over a period of three months at NMS		**61%**	**88%**	**54%**	100%
% of health facilities with **all six** tracer medicines available on the day of the visit		43%	50%	46%	80%
% of health facilities without monthly stock outs of any tracer medicines in the previous six months		43%	53%	57%	60%
Average % availability of basket of six individual tracer medicines at health facilities on the day of the visit		**84%**	**87%**	**85%** ORS - 75% Cotrimoxazole-89% ACT - 92% SP - 79% Measles vaccine-85% Depo Provera - 93%	100%
% of facilities with the current		14% – EMLU 48% – UCG	30% EMHSLU 40% UCG	No data	100%

Key Pharmaceutical Indicators	Overall Progress	Baseline 2010/2011	Achievement 2012/2013	Achievement 2013/2014	Target 2014/2015
EMHSLU and UCG available					
% of vital, essential and necessary items issued at NMS		No data	No data	V- 60% E- 17% N- 23% **(n- 1358) items** **Total sales- 320 billion shillings**	
% of average international price paid by the central warehouses for procured basket of essential medicines		NMS – 64% JMS – 51%	NMS – 63% JMS – 52%	NMS- 52% JMS- 54%	<100%
% of health facility orders placed that are fully filled at NMS		Order fill – 66% Nil Line – 25% Adjustment – 9%	Order fill – 65% Nil Line – 35% Adjustments – 1%	Order fill- 68% Nil line- 32% Adjustment- 14%	
Average NMS lead-time (days) from ordering to delivery at the facility		**59 days** (range 20 – 215)	**40 days** (range 15 – 91)	**39 days** (range 0 – 111)	Max 60
% of deliveries made by NMS to the facilities within the scheduled date		42% (2009/2010)	47%	74%	
% of health facility orders submitted on time as per NMS delivery schedule		78%	88%	89%	100%
Compliance of major suppliers to agreed delivery schedule		-	QCL – 1.3 months delay GF ARVs - 0.7 months delay,	No data	+_14 days

Key Pharmaceutical Indicators	Overall Progress	Baseline 2010/2011	Achievement 2012/2013	Achievement 2013/2014	Target 2014/2015
(GF, UNITAID, QCL)			UNITAID – 1.3 months delay		
% of facilities with stock book correctly used		36%	50%	56%	100%
% of facilities with (sampled) stock cards correctly filled		7%	36%	50%	100%
% of GoU funds allocated for credit line EMHS distributed to health facilities (excluding ARVs, ACTs, TB supplies, and vaccines)		75%	103%	101%	95%
% of GoU funds released for EMHS out of the total health sector (including ARVs, ACTs, TB supplies, and vaccines)		**31%** (2011/2012)	**29%**	**19%**	
Per capita expenditure on EMHS (including ARVs, ACTs, TB supplies, and vaccines)		**USD $2.18** (2011/2012)	**USD $2.09**	**USD $ 2.40**	
Per capita expenditure on EMHS (excluding ARVs, ACTs, TB supplies, and vaccines)		**USD $0.50**	**USD $0.90**	**USD $ 0.99**	
Donor vs. Government funding contribution for		GoU – 23% Donor – 77%	GoU –30% Donor – 70%	GoU- 23% Donor- 77%	

Key Pharmaceutical Indicators	Overall Progress	Baseline 2010/2011	Achievement 2012/2013	Achievement 2013/2014	Target 2014/2015
EMHS					
% of sampled essential medicines failing pharmaceutical, chemical or microbiological NDA quality tests		11%	9%	4%	
Number of reports submitted on pharmacovigilance		268 ADR	238 ADR	273 ADR	
Number of drug outlets/pharmacies inspected annually		**Private:** Pharmacies – 747 Drug outlets – 11,785	**Private:** Pharmacies – 976 Drug outlets – 6,140 **Public:** Pharmacies – 605	**Private:** Pharmacies – 901 Drug outlets – 5,984 **Public:** Pharmacies – 1002	
Number of drug outlets/pharmacies passing inspection			**Private:** No data **Public:** 347	**Private:** 884 (98%) **Public:** 486 (49%)	
% of medicines dispensed that are adequately labeled		**34%**	**64%** (medicine name and dose correct) 20% (Complete label correct)	**83%** (medicine name and dose correct) 24% (Complete label correct)	100%
% of patients knowledgeable about the dosage and duration of taking medicines dispensed		**59%**	**76%**	**57%**	100%
Adherence to		Malaria – 5%	Malaria – 47%	Malaria – 66%	100%

Key Pharmaceutical Indicators	Overall Progress	Baseline 2010/2011	Achievement 2012/2013	Achievement 2013/2014	Target 2014/2015
UCGs for treatment of malaria, diarrhea, URTI		Diarrhea – 10% URTI – 10%	Diarrhea – 47% URTI – 37%	Diarrhea – 37% URTI – 31%	
% Performance on 25 SPARS indicators for public and PNFP facilities		45%	64%	73%	
Accuracy of the HMIS 105 report on stock outs of tracer medicines		43%	79%	89%	100%
Number of pharmacy students and pharmacy technicians enrolled and graduating per year		**Pharmacy Students** Enrolled – 85 Graduating – 78 **Pharmacy Technician** Enrolled – 42 Graduating – 25	**Pharmacy Students** Enrolled – 120 Graduating – 76 **Pharmacy Technician** Enrolled – 54 Graduating – 34	**Data not available**	
Pharmacists per 100,000 population		1.1	1.2	1.6	
% of pharmacist and pharmacy technician positions fully filled in the public sector		**Pharmacists** 55% **Pharmacy Technician/ Dispenser** 59% (2011/2012)	**Pharmacists** 26% **Pharmacy Technician/ Dispensers** 37%	**Pharmacists** 11% **Pharmacy Technician/ Dispenser** 62%	75%

Key

	Achieved
	Fair progress
	Not achieved
	No data available

1. INTRODUCTION

The Ministry of Health developed the Health Sector Strategic Investment Plan (HSSIP) to operationalize the National Health Policy (NHPII). The HSSIP identifies and outlines procurement and management of medicines and other health supplies as a major component that ensures the consistent availability of safe and efficacious essential medicines and health supplies required for the effective nationwide delivery of the Uganda National Minimum Health Care Package (UNMHCP). In relation to pharmaceuticals, the main objectives of the HSSIP are:

- To develop and implement a harmonized procurement system for medicines, health supplies and logistics in the health sector.
- To ensure the availability of essential medicines, other supplies and logistics at all levels of the health care delivery system.
- To set up an effective management structure for the pharmaceutical sector with clearly defined roles and responsibilities for each of the major players.
- To strengthen the medicines regulatory system in the country to ensure quality assurance of all pharmaceutical and other medical supplies.

Over the past four years significant achievements have been realized in the pharmaceutical sector as a result of the progress made in implementing the National Pharmaceutical Sector Strategic Plan (NPSSP) II 2010/2011 to 2014/2015. The strategies and interventions laid out in the NPSSP were designed to strengthen systems, capacity and performance at both national and health facility levels. The NPSSP covered a wide range of areas including financing, warehousing and distribution, procurement planning, information management tools, human resources, health worker knowledge and skills in medicines management, supportive supervision and accreditation of public pharmacies. The overall aim of the NPSSP is to contribute to the attainment of a good standard of health by the population of Uganda through ensuring the availability, accessibility and affordability, at all times, of essential medicines and health supplies of appropriate quality, safety and efficacy and by promoting their rational use.

Purpose of the report

This second Annual Pharmaceutical Sector Performance report presents data from the FY 2013/2014 on each of the 31 indicators and highlights progress and issues on implementation of NPSSP II . Progress is assessed by examining the trends in the selected indicators over time and compared to targets set for the 2015 deadline. The report focuses on five result areas of;

1. Increased availability of EMHS
2. Increased affordability and financing of EMHS
3. Increased safety, efficacy and quality of EMHS
4. Improved appropriate use of EMHS
5. Strengthened human resources in the pharmaceutical sector.

2. METHODOLOGY

Data for the indicators were drawn from various sources including records from National Medical Store and Joint Medical Store, National Drug Authority reports, Human Resource reports, procurement agent shipment reports, health facility records, Medicines Management Supervisory reports, DHIS2, HMIS and special surveys implemented by Pharmacy Division and stakeholders. To ensure standardized measurements, operational definitions are clearly defined for each indicator with the data source, collection method, calculation method and data limitations described in detailed indicator tables. Where indicators can be measured through more than one source of data, these are presented together for the purpose of comparison and validation where appropriate.

Table 2: NPSSP indicators under the five result areas

1. Increased Availability of EMHS

1.1 Availability

1. Average % availability of six tracer vital medicines measured over a period of three months at NMS
2. Average % availability of basket of six individual tracer vital medicines at health facilities on the day of the visit
3. % of health facilities with **all six** tracer vital essential medicines available on the day of the visit, by level of care
4. % of health facilities without monthly stock outs of any tracer medicines in the previous six months

1.2 Procurement and Delivery

5. % of health facilities with the current EMHSLU and UCGs available
6. % of vital items issued at NMS (EMHS)
7. % of health facility orders placed that are fully filled at the NMS
8. Average lead-time (days) from ordering by the facility to delivery to the facility
9. % of deliveries made by NMS to the facilities within the scheduled delivery date
10. % of health facility orders submitted on time as per NMS delivery schedule
11. Compliance of major suppliers to agreed delivery schedule

1.3 Medicines Management

12. % of health facilities with stock book correctly used
13. % of health facilities with stock cards correctly filled
14. % performance of 25 SPARS indicators at public and PNFP health facilities
15. Accuracy of the HMIS 105 report on stock out of tracer medicines

2. Increased Affordability and Financing of EMHS

2.1 Affordability

16. % of average international price paid by the central warehouses for procured essential medicines

2.2 Financing

17. % of GoU funds allocated for credit line EMHS distributed to health facilities (excluding ARVs, ACTs, TB supplies, and vaccines)
18. % of GoU funds released for EMHS out of the total health sector spending (including ARVs, ACTs, TB supplies, and vaccines)
19. Per capita GoU expenditure on all EMHS (including ARVs, ACTs, TB supplies, and vaccines)
20. Per capita GoU expenditure on EMHS (excluding ARVs , ACTs, TB supplies, and vaccines)
21. Donor vs. Government funding contribution for EMHS

3. Increased Safety, Efficacy, and Quality of Medicines and Health Supplies

3.1 Safety and Efficacy

22. Number of reports submitted on pharmacovigilance

3.2 Quality

23. % of sampled medicines failing pharmaceutical, chemical or microbiological NDA quality tests
24. Number of Drug outlets/pharmacies (private, public, and whole seller) inspected annually
25. Number of Drug outlets/pharmacies (private, public, and whole seller) passing inspection

4. Improved Appropriate Use of Medicines and Health Supplies

4.1 Dispensing

26. % of medicines dispensed that are adequately labeled
27. % of patients knowledgeable about the dosage and duration of taking medicines dispensed

4.2 Prescribing

28. Adherence to UCGs for Malaria, Diarrhea, Upper Respiratory Tract Infection (URTI)

5. Strengthened Human Resources in the Pharmaceutical Sector

5.1 Human Resources

29. Number of pharmacy students and pharmacy technicians enrolled and graduating per year
30. Pharmacists per 100,000 population ratio
31. % of pharmacist and pharmacy technician positions filled in the public sector

3. FINDINGS AND DISCUSSION

3.1 Increased Availability of EMHS

Availability of EMHS

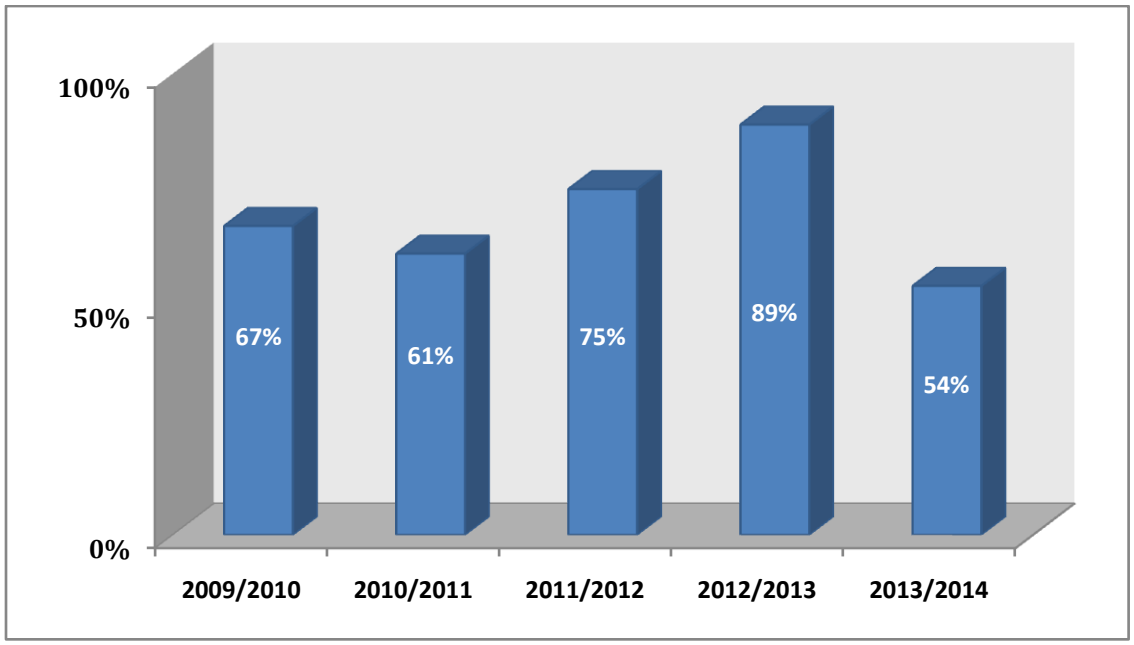
The National Pharmaceutical Sector Strategic Plan (NPSSP) emphasizes the importance of efficient and appropriate procurement, storage, distribution and management of EMHS at all levels of the system as the means for ensuring consistent availability of EMHS for the effective nationwide delivery of the Uganda National Minimum Health Care Package.[1] Four indicators measure the availability of priority health care EMHS at central level and health facility level.

Indicator 1. Percent availability of six tracer vital medicines measured over a period of three months at NMS

This indicator measures if NMS maintained at least two months of stock of all six tracer EMHS over a three month period. (Two months of stock is considered to be the minimum safety stock level) Data are collected by the Pharmacy Division at the end of month from NMS warehouse inventory records which provide data on the quantity in stock and quantity issued which is used to calculate the average monthly issues in the three month period. Months of stock are calculated by dividing the stock on hand for each month by the average monthly issues . The item is available if stocked two or more months or else classified as unavailable. The sum for all the availability scores for each tracer is medicine taken for the three months period. The six tracer EMHS include Artemether 20mg+Lumefantrine 120mg (strip of 24 tablets), co-packaged ORS and Zinc tablets, Cotrimoxazole 480mg tablet, Oral Rehydration Salts for 1lt, Pyrimethamine 25mg+Sulfadoxine 500mg tablet, Medroxyprogesterone Acetate 150mg/Ml w/syringe and Measles vaccine 10 dose vial. The indicator then finally measures how many months out of the three the drug is available and it is calculated as an average availability percentage for all the six tracer drugs.. It is assumed here that NMS inventory data are accurate. If data for a month is not available then that month is not applicable in the calculation.

[1] *According to the World Health Organization (WHO), essential medicines are intended to be available within the context of functioning health systems at all times, in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford. Availability of supplies is known to increase the confidence in the health care system by health workers and the public. Improved availability results in increased patient attendance and therefore, better coverage to the population (Haak 1991, 62).*

Figure 1: Availability of the six Tracer Medicines over a period of the last three months from the date of visit at NMS



- After two consecutive years of improvement, the availability of tracer medicines at NMS dropped steeply in 2013/2014 with only 54% of the days (out of 90) where all the six tracer medicines were available (had two months of stock). This was the lowest performance in the past five years. The poor score is primarily because the supply of ACT 120mg and Cotrimoxazole 480mg fell below two months of stock for almost three quarters. Table 3 shows the months of stock for each of the tracer EMHS over the year.

- For the ACTs, ORS and SP, NMS explained they had changed their procurement procedures to a "just in time"[2] method to avoid holding a large volume of stocks; The "just in time" method considers one month stock as sufficient this is possible because these products are procured locally and the lack of sufficient warehouse space is addressed . In the same period there was also a delay in Global Fund procurement of ACTs. The availability of Depo-Provera and ORS was also sub-optimal during the first half of the year.

[2] *Just in time (JIT) is a management system where products are produced and acquired only as demand requires.*

Table 3: Months of Stock for the Six Tracer Medicines at NMS from July 2013 to June 2014

Product Description	Average Monthly issues	13-Jul	13-Aug	13-Sep	13-Oct	13-Nov	13-Dec	14-Jan	14-Feb	14-Mar	14-Apr	14-May	14-Jun
ARTEMETHER 20MG+LUMEFANTRINE 120MG (24 TABS)	39,770	5.1	4.3	3.8	2.1	1.7	1.7	1.1	0.3	1.3	1	1.2	1.5
COTRIMOXAZOLE 480MG TABLET	16,656	2.3	2.5	2.6	NR	1	NR	1.4	0.4	0.6	1.2	0.5	1.5
ORAL REHYDRATION SALTS FOR 1LT	27,896	0.3	0.9	0.4	NR	0.1	NR	9.6	6.9	7.6	9.7	6.4	5
PYRIMETHAMINE 25MG+SULFADOXINE 500MG TABLET	927	3.1	6.7	5.5	NR	5.2	NR	5.5	3.9	5.2	4.6	4.4	3.8
MEDROXYPROGESTERONE ACETATE 150MG/ML W/SYRINGE	884	4.4	3.6	1.9	NR	0.1	NR	0.1	2.9	13.9	12.4	10.6	9.9
MEASLES VACCINE 10 DOSE VIAL	18,608	3	2.3	4.2	NR	3.8	NR	2.4	1.9	4.4	5.8	3.1	0.2

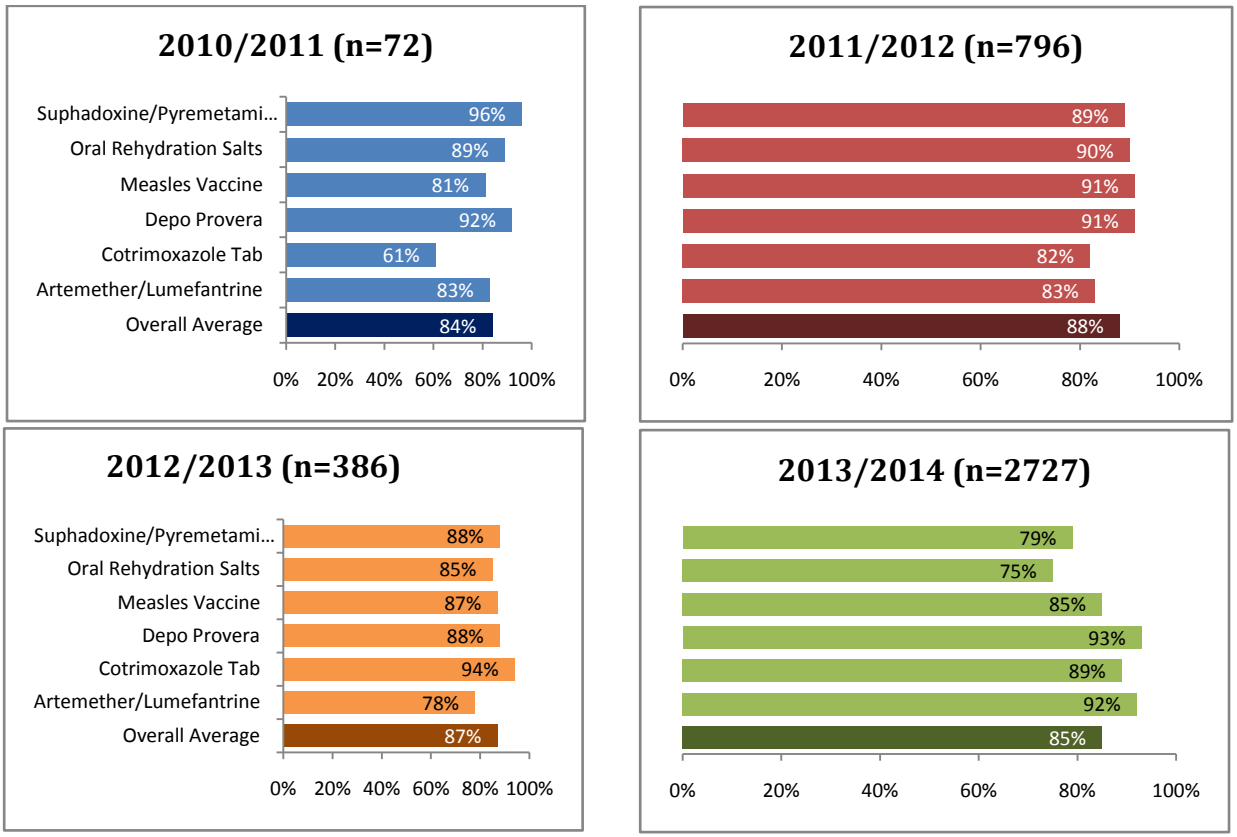
*** Minimum months of stock (MOS) is 2 months, Maximum (MOS) is 6 months * NR- Data not reported**

Indicator 2. Availability of the six individual tracer medicines at health facilities on the day of visit

Figure 2 shows the percent of facilities that had the individual tracer medicines in stock on the day of a visit, for the years 2010 to 2014. These data are collected and reported electronically by trained Medicine Management Supervisors (MMS) as part of their SPARS visits to public and private-not-for-profit facilities during the year. The percentage is an average of what was reported as available in a facility during a supervisor visit conducted at any time during the year; as such it represents a picture of availability across the year. A facility is only included once in the sample. The computerized data which have data quality checks make the calculations across hundreds of facilities relatively easy.

In 2013/2014, data for this indicator came from 2,727 health facilities, making this a very robust sample size compared to 2010 with only a sample of 72 facilities. Overall, with the exception of ACTs and Depo-Provera, availability of tracer medicines in 2013/2014 was lower than the previous year. Interestingly, 92% and 89% of facilities had ACT 120mg and Cotrimoxazole 480mg in stock during the visits even though stocks at NMS fell below the optimum two months of supply for much of the year, this could be seen as supportive of their 'just in time' approach to procurement. On the other hand, SP had one of the lowest availability scores (79%) yet this product appears to have been amply stocked at NMS throughout the year. This underlines the fact that there are many steps or factors both within and between central and facility level that determine the end result of availability of a product.

Figure 2: Availability of the Six Individual Tracer Medicines at Health Facilities on the day of visit from 2010/2011 to 2013/2014



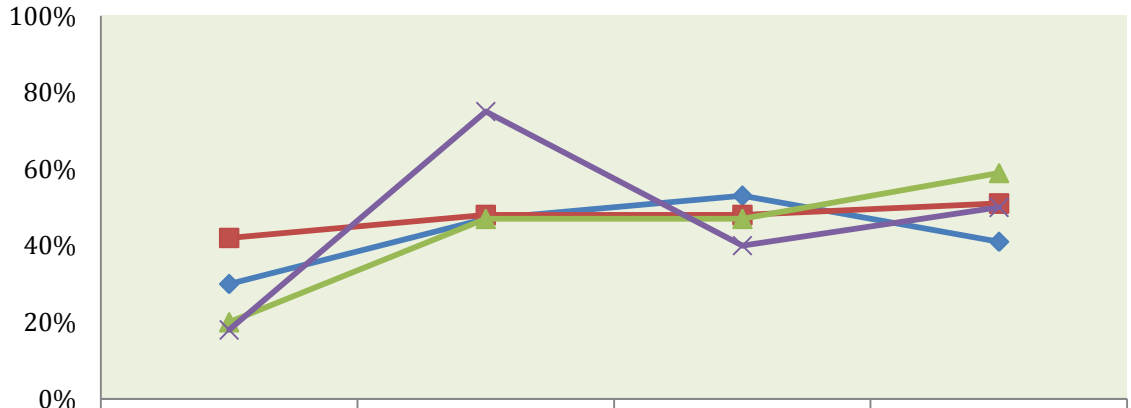
Indicator 3. Percentage of health facilities with <u>all six tracer</u> medicines available on the day of the visit, by level of care

The figure below shows the percentage of facilities that had all six tracer medicines in stock on the day of visit, by level of care. Comparing 2013/2014 with the previous three years, we can see an improvement in availability at all levels of care since 2010. However, the most significant increases are in hospitals and HCIV (roughly tripled), with a more modest increase in HCIIIs, and although there is a small increase since 2010 in HCIIs, availability decreased since last year.

One explanation for the greater improvements seen at higher level facilities is that the MOH interventions to improve medicines management (e.g. inventory management and ordering) have worked and that at higher levels of care there is greater scope for improved results because they are able to determine how they spend their EMHS budget, unlike HCII and HCIIIs which receive kits. This is supported by an analysis of SPARS results as part of the SURE project evaluation which showed a strong correlation between a facility's SPARS score and availability of EMHS in the facility; the correlation was strongest for HCIVs and hospitals. The kits were introduced at the lower level facilities to improve availability,

which it has done overall, however there are constraints to how far they can improve the situation because a 'one fit for all' approach with a fixed budget does not address individual facility requirements [3].

Figure 3: Percentage of Facilities with All Six Tracer Medicines Available by Level of Care (LOC)



	2010/11	2011/2012	2012/2013	2013/2014
HC2	30%	47%	53%	41%
HC3	42%	48%	48%	51%
HC4	20%	47%	47%	59%
HOSP	18%	75%	40%	50%

Indicator 4. Percentage of health facilities without monthly stock outs of any tracer medicines in the previous six months

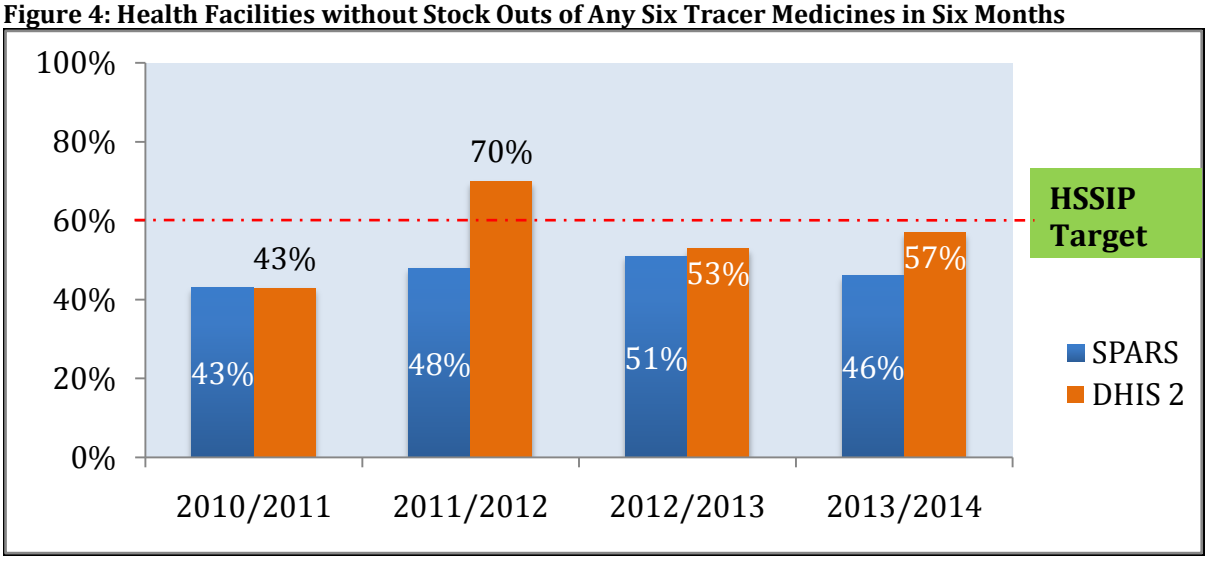
This indicator is the health sector indicator reported in the Health Sector Strategic Investment Plan (HSSIP) which measures longer-term availability of the six vital tracer medicines. The indicator is measured every month by health facility workers who record the stock out days (Stock out refers to absence of essential medicines at the health facility stores)for the individual tracer medicines in the HMIS 105 form reported through DHIS 2. The indicator calculates the number of reporting facilities that did not have a stock out of any of the six products in the previous six months in the total number of reporting facilities. The HSSIP target for 2015 is for 60% of facilities to have continuous availability of the six tracer medicines, i.e. no stock outs of the product during the period.

Data from HMIS 105 reports show there has been overall steady progress over the past few years in reducing stock outs of the tracer products and that the HSSIP target of 60% could be reached next year. The SPARS data show a more mixed picture, even an increase of stock

[3] *Annual comprehensive evaluations of the kit system have been conducted. The 2013 evaluation showed that most items are still either under or over supplied. Only 20% of the items appear to be adequately supplied- Kit Survey 2013.*

outs between 2012/13 and 2013/14. It is clear, however, that both data sources show that still an unacceptably high percentage of health facilities experience stock outs of one or more of the tracer medicines over a six month period. This is a difficult target to achieve but nonetheless an important indicator of how well the supply chain system is performing and the basic package of essential health services being delivered. To achieve greater results it is recommended that a pull system be implemented across all levels of care so that there is a more equitable distribution of EMHS resources. This approach requires commitment by the government to support policy change and interventions that demonstrably improve the capacity of central warehouses and all facilities to use these resources appropriately.

Figure 4: Health Facilities without Stock Outs of Any Six Tracer Medicines in Six Months



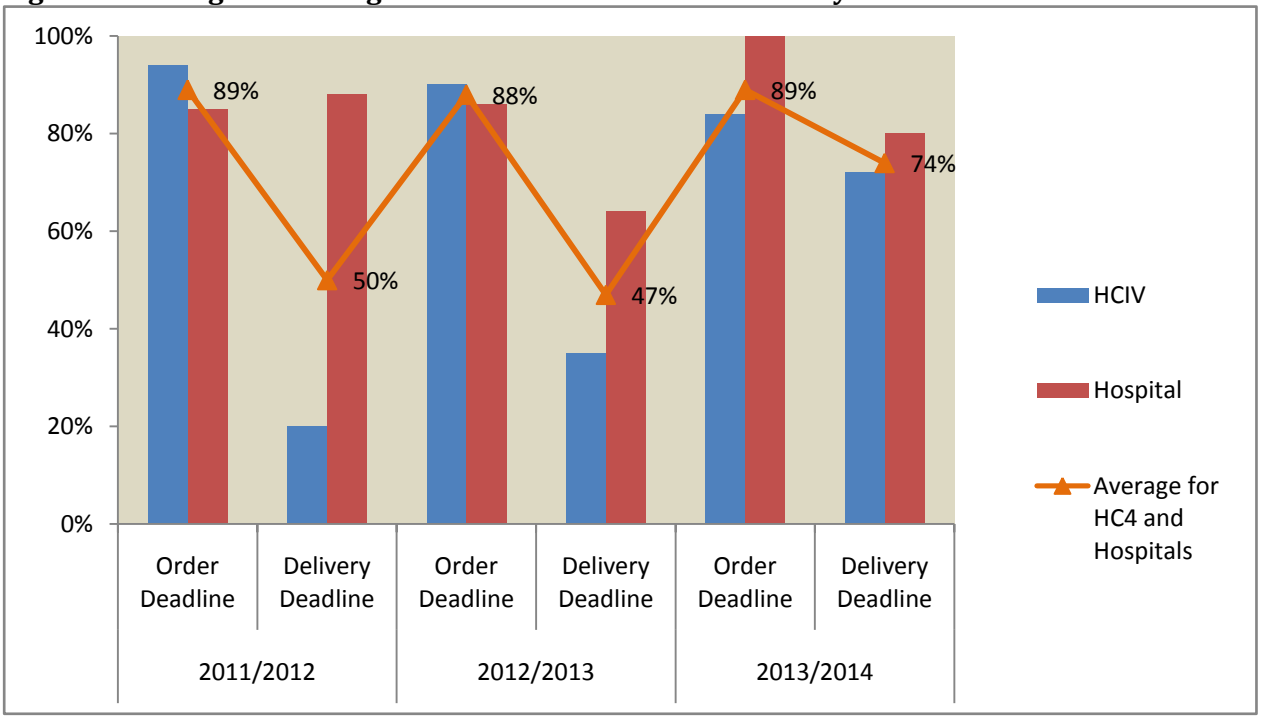
Procurement and Delivery

Supplying over 3,000 government health facilities is challenging and therefore schedules for ordering and delivery have to be adhered to by health facilities and NMS. (Suppliers too must deliver on time but that is not included in this indicator) Two indicators were used to measure adherence to order schedules and delivery for EMHS commodities.

Indicator 5. Facility and NMS Adherence to the Ordering-Delivery Schedule

NMS instituted bimonthly ordering and delivery schedules for government health facilities. This indicator is an average across the year of the percentage of hospitals and HCIVs that submitted their bimonthly order on schedule and the percentage of those orders that NMS delivered on schedule. HCIII and HCIIs are not included as they do not place orders, they are supposed to receive a pre-packed kit every two months.

Figure 5: Average Percentage Adherence to Order and Delivery Schedules



- Facility adherence to the order schedule has remained almost constant for the past three years at between 85 to 90% of hospitals and HCIVs submitting their orders to NMS by the scheduled deadlines. HCIVs used to perform better than hospitals but this year 100% of hospitals submitted each of the bimonthly orders on time.

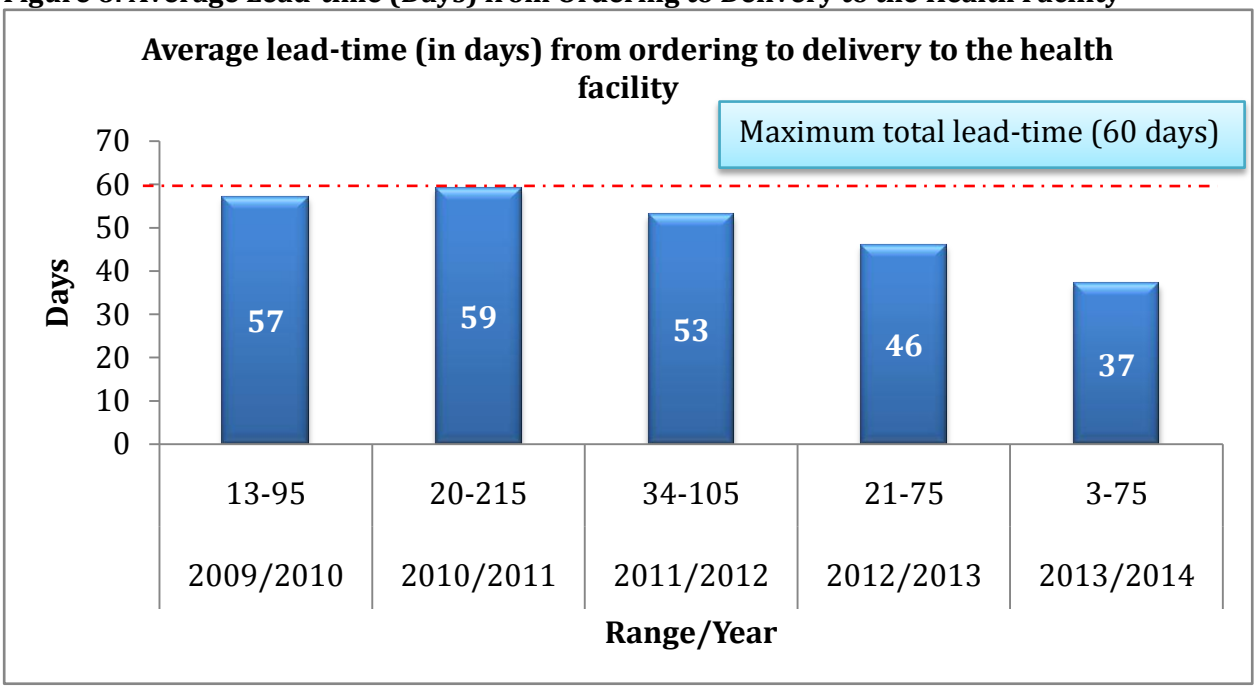
- NMS adherence to delivery schedules has improved markedly over the past three years. While in 2010/11 delivery to hospitals (which are located in major town areas) was much better than delivery to HCIVs (which are many more and less accessible), this year delivery to both types of facilities is now at the same level and both have improved. These improvements are possibly due to the last mile delivery system set up by NMS using third party logistic providers for distribution from the district to the health facility and their improved performance over time.

Indicator 6. Average lead-time from ordering by the facility to delivery to the facility

With a minimum stock level of two months and maximum of five months for essential medicines, it is important for the facility to receive their fresh supplies before they are too low to supply their client needs. NMS has set the maximum lead time from receipt of facility order to delivery at the facility as 60 days.

The data on average lead time shown in Figure 6 were obtained from NMS order records and delivery notes for a sample of 35 hospitals and HCIVs across the country. Also shown is the range of lead time days. The same sample of 35 facilities is used every year to track progress.

Figure 6: Average Lead-time (Days) from Ordering to Delivery to the Health Facility



- The average number of days between order received at NMS and delivered to the facility has significantly reduced over the years, from 57 days in 2009/10 to 37 in 2013/14. As regards the range of lead time days the minimum of three days is presumably for an emergency order while the maximum of 75 days is well above the 60 maximum and the reasons for this should be explored and addressed.

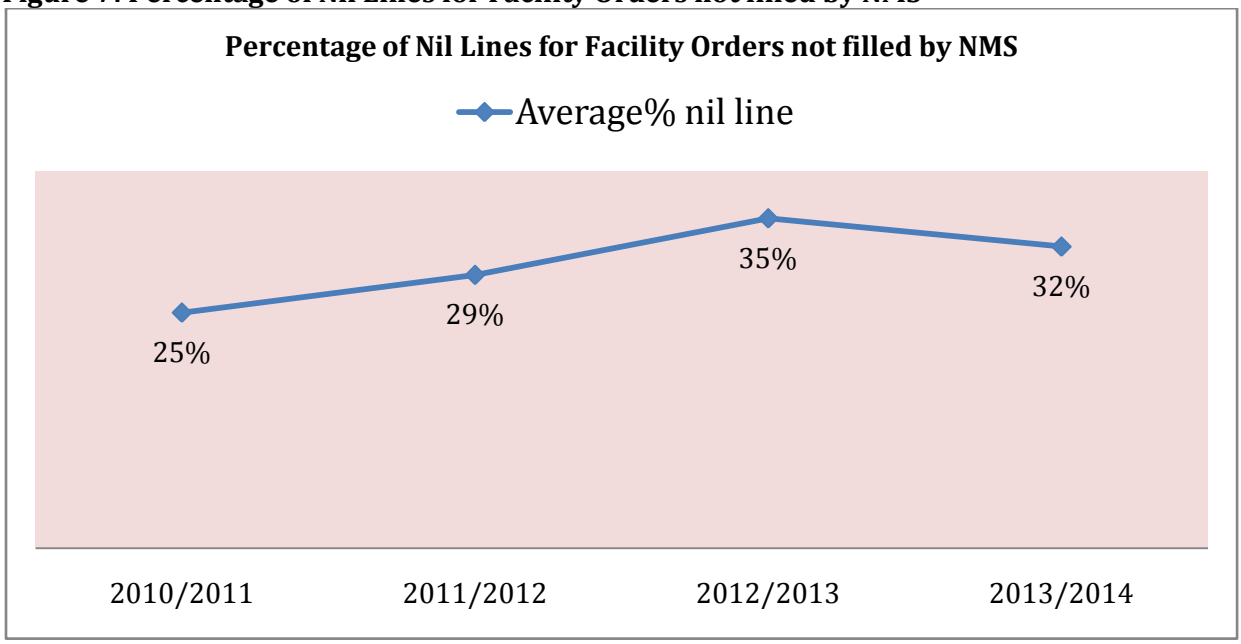
Indicator 7. Percent of Health Facility Orders that are Fully Filled (at NMS)

Order fulfillment[4] depends on the sufficient availability of EMHS at NMS as well as having strong systems in place for correctly processing orders including inventory management, picking and packing of items. The same sample of 35 facilities is used to calculate the nil lines which is a measure of how many items in a given order have not been supplied. Information is obtained from facility orders submitted to NMS and compared to NMS delivery notes for the sampled facilities. Figure 7 shows the average percent of items in an

[4] *This is a measure of how many items in a given order have been supplied. An order can be filled, not filled, or adjusted so that items are supplied in excess (upward variation) or shortage (downward variation) of the order.*

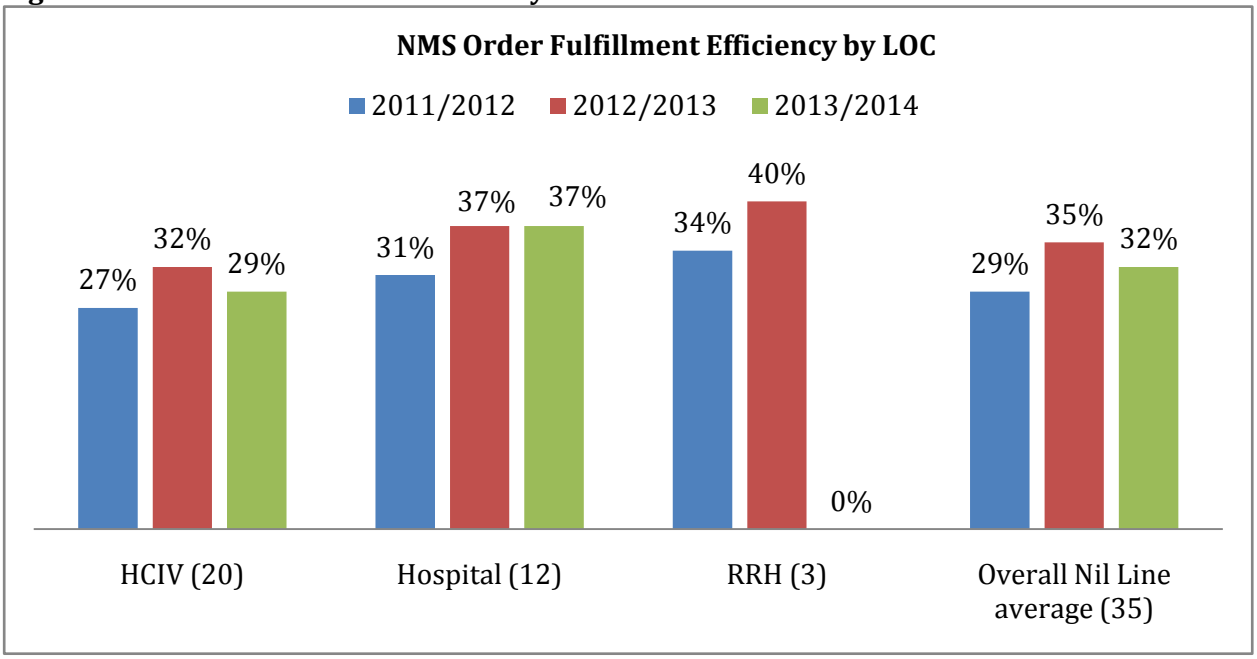
order that were not supplied by NMS ("Nil lines"). This indicator is calculated only for HCIVs and hospitals. Ideally, all orders should be fully filled.

Figure 7: Percentage of Nil Lines for Facility Orders not filled by NMS



- Over the past three years there has been little change with about one-third of items ordered by the higher level facilities not being filled by NMS. Order fill performance was highest (75%) in 2010/11. There are many reasons why a facility's order is not fully filled: item out of stock, item being rationed, insufficient facility budget balance, inaccurate information of stock on hand for the item, item order not properly logged or packing process substandard. It would be helpful for NMS to track their own order fulfillment rate, identify the causes and take corrective action to improve their performance. The data were further analyzed by level of care to see if there are differences and whether some levels of care are more affected than others (Figure 8). Last year, Regional Referral Hospitals received all of the items they ordered (0% Nil lines) but 37% of the items ordered by hospitals were not supplied; HCIVs were better off with "only" 29% of items not supplied. As mentioned above a number of factors could explain this poor performance. Hospitals order a wider range of EMHS than HCIVs making it more complex to fulfill at 100%, particularly if funding is insufficient to maintain adequate supplies and warehouse systems are weak.

Figure 8: NMS Order Fulfillment Rate by Level of Care



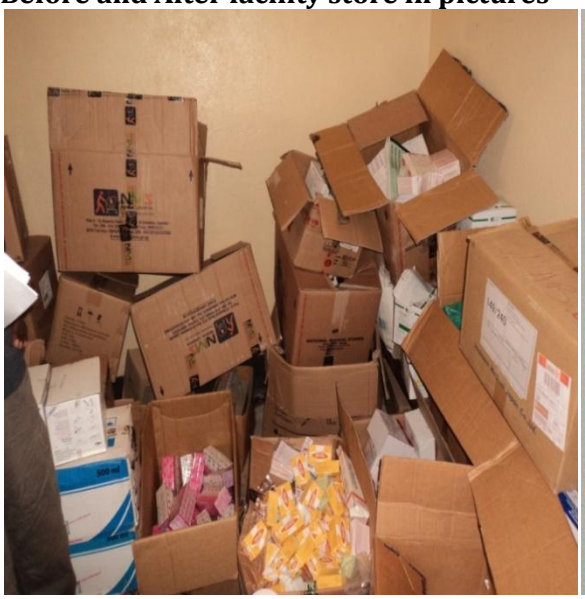
Medicines Management

To strengthen medicines management at district and facility level, the SPARS intervention combines supportive supervision, structured performance assessment and recognition for good performance. National SPARS coverage is currently 87%, with 97 districts out of 112 having implemented SPARS to varying degrees. A total of 1,809 public and 376 PNFP facilities have had at least one SPARS supervisory visit. Trained Medicines Management Supervisors (MMS) assess facility performance using 25 indicators in five areas: stock and storage management, ordering and reporting and prescribing and dispensing quality.

Stock Management

Good storage and inventory management practices are fundamental to ensuring the availability of appropriate products, in adequate quantities and of quality standards. Accurate and up-to-date recording of inventory on stock cards and stock books forms the basis of good stock management while good storage management ensures commodities are stored in a systematic manner to facilitate retrieval and protect the products from deterioration.

Before and After facility store in pictures



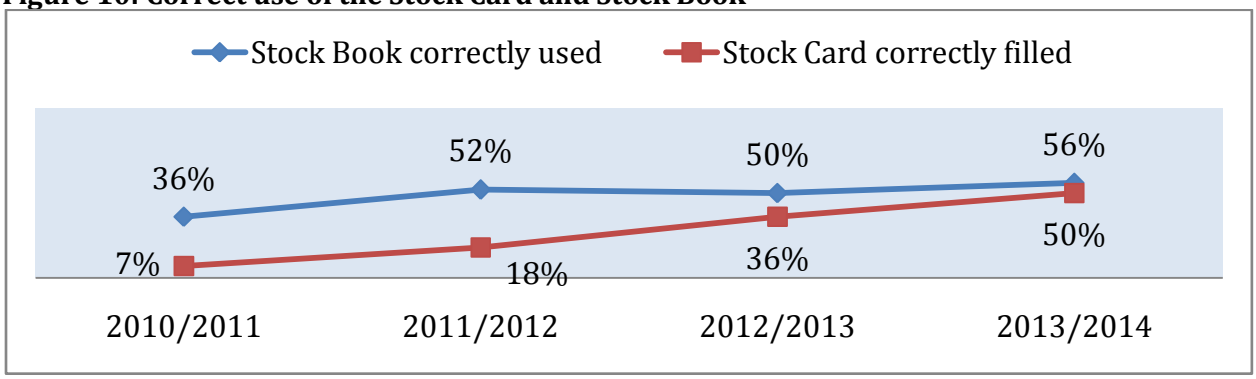
Before - 2010 **After- 2014**

Storage of essential medicines and health supplies has greatly improved following the roll out of the SPARS capacity build strategy and USAID through the SURE program funded shelves to over 1,927 health facilities in 59 districts. The pictures illustrate storage in 2010 and after the shelving in 2014. The plan is to ensure shelves to all remaining facilities in the coming years.

The proper use of stock cards and stock books helps to ensure that stock outs and expiry from over- stocks are avoided and health workers are able to easily track stock movement and calculate what they need to order.

Below, data for **Indicator 8 and 9** shows that health workers/store managers are slowly but steadily improving their use of both stock cards and stock books over the past four years. From just 7% in 2010/11, now 50% of the supervised facilities were correctly using stock cards for the 15 indicator products that are assessed by MMS during SPARS visits.

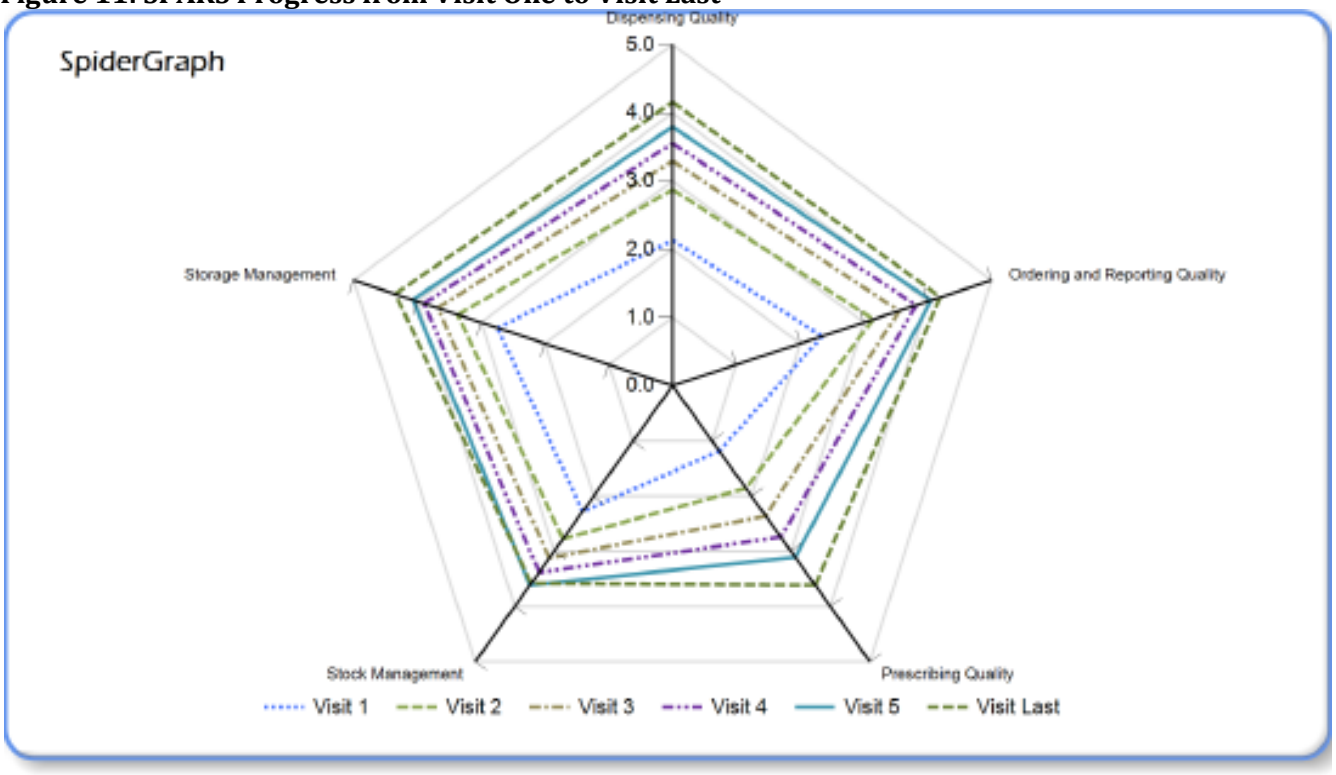
Figure 10: Correct use of the Stock Card and Stock Book



Indicator 10. Performance on 25 SPARS Indicators at Public and PNFP Facilities

The spider graph is a visual tool used to show progress in all five areas of medicines management from first SPARS visit to visit six. Each area of medicines management is ranked on a scale of zero to the highest score of five. Scores from all of the SPARS visits, beginning with the first visit in July 2010 to December 2014, are shown in Figure 11.

Figure 11: SPARS Progress from Visit One to Visit Last

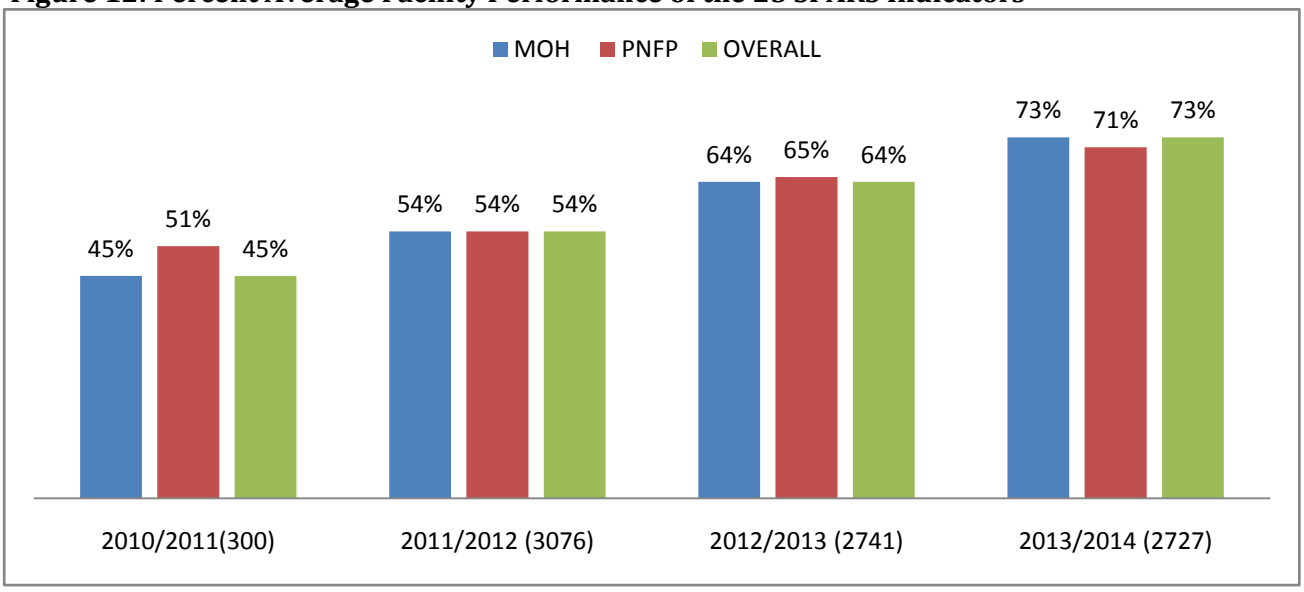


Visit number	Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit Last
Total score average	10.62	14.00	15.97	17.37	18.64	19.80
Number of visits	2058	1731	1559	1363	1129	898

The improvement in facility performance over the past four years is very clearly visible. With each successive visit there is continued improvement. Prescribing quality, the poorest area at the start of SPARS, has improved the most; there is however still a lot of room for further improvement. Stock management, although much improved since baseline, appears to be stagnating with very minimal change after the last two visits which suggests alternative approaches might be needed for this area to improve further. Figure 12 below, shows an overall improvement by facilities visited (both MoH and PNFP) in performance measured using 25 SPARS indicators. This is based on a maximum score of 25

for the five assessment areas indicated above. The percent score is an average number of facilities visited that were able to achieve the maximum score of 25.

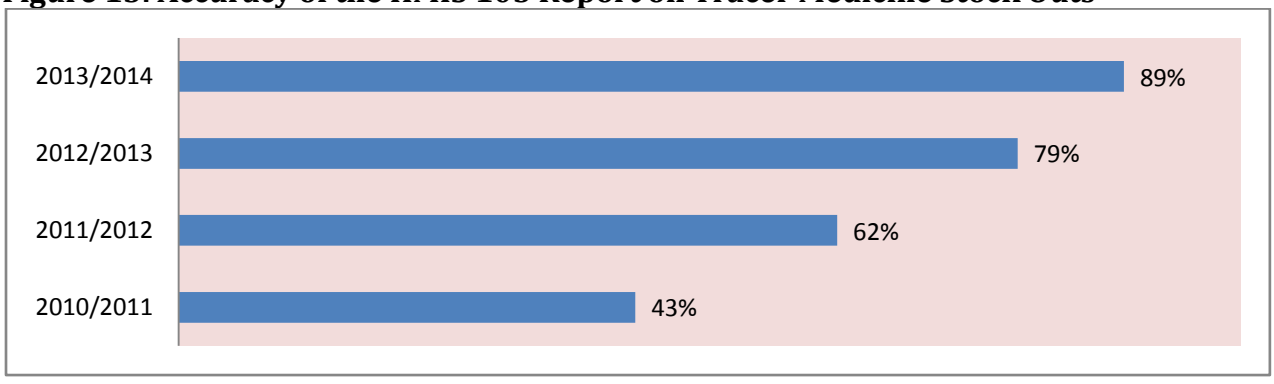
Figure 12: Percent Average Facility Performance of the 25 SPARS Indicators



Indicator 11. Accuracy of the HMIS 105 Report on stock out of tracer medicines

The HMIS 105 Report is a Ministry of Health standard report that is a primary source of facility service statistics and other data for monitoring, including experience of stock outs of the six tracer medicines during the month. To assess accuracy, data (number of stock out days) recorded on the tracer medicines in the stock card and HMIS report are compared for agreement. The agreement is summed to obtain the proportion of accurate HMIS reports out of the total number of facilities surveyed with HMIS reports. In 2013/14, nine of ten of the HMIS 105 facility reports on the tracer medicines were accurate (for all six products) based upon review of the stock cards. This is a huge improvement over the baseline of 43% in 2010/11 and each year accuracy has improved significantly.

Figure 13: Accuracy of the HMIS 105 Report on Tracer Medicine Stock Outs



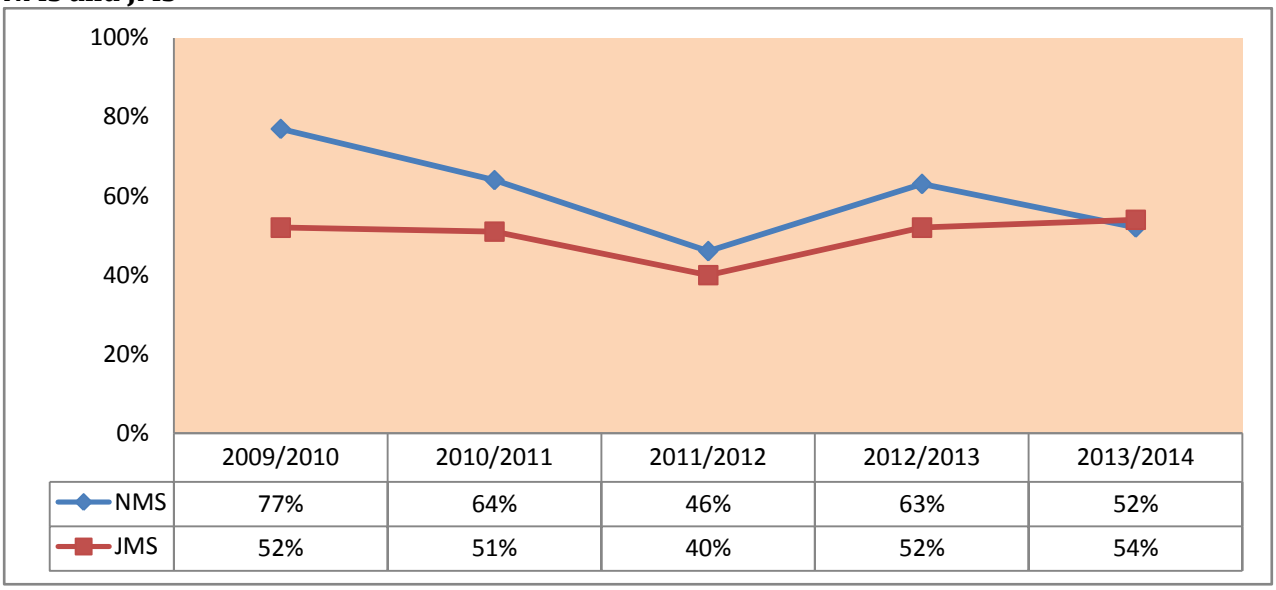
3.2 Increased Affordability and Financing

To assess affordability, one indicator on price was used and five indicators assessed health and commodity financing.[5]

Indicator 12. Average International Price Paid by the Central Warehouses for Procured Essential Medicines

NMS and JMS are the main procurement agencies for public health sector facilities and private not-for profit facilities respectively. To ensure greater value for money, the central warehouses need to ensure optimal and competitive prices achieved through a tendering process and using pooled procurement. Data for this indicator are obtained from NMS and JMS procurement prices for a basket of 51 commodities that are included in the HMIS 018 order form. The prices are then compared to the median international buying prices obtained from the MSH International Drug Price Guide. Performance is considered good if the procurement agencies are below 100% of the international price. (the lower the percentage, the more competitive the price is and greater the value for money)

Figure 14: Percent of Average International Price Paid for Procured Essential Medicines by NMS and JMS



	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
NMS	77%	64%	46%	63%	52%
JMS	52%	51%	40%	52%	54%

- Over time, average procurement prices for the basket of essential medicines have reduced for both NMS and JMS, with both of them procuring at about half of the

[5]*According to the World Health Organization (WHO), "Affordable essential medicines of assured quality are to be available at all times in adequate amounts within a functioning health system." Health financing refers to the "function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system. The purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care.* ***WHO. 2010. Monitoring the building blocks of health systems. A handbook of indicators and their measurement strategies***

average international procurement prices[6]. This is a very good achievement: the more competitive the price, the greater the value for money (if product quality is maintained).

Financing

Data from 2010/2011 to 2013/2014 for the five **indicators 13 to 17** related to EMHS financing are presented in the following tables and figures.

Overall funding from the government and donor partners to the health sector and for EMHS has increased each year since 2010/2011 annually.

Government contribution to the funding increased slightly from 23% in 2010/2011 to 30% in 2012/2013 and 28% in 2013/2014.

Between 2010/2011 and 2013/2014, per capita Government expenditure on EMHS (excluding ARVs, ACT's, TB supplies, and vaccines) increased by 98% from US$0.5 to US$0.99 (Table 4). However, overall per capita Government expenditures on EMHS (incl. ARV, ACT, TB supply, and vaccine) has stagnated at almost $2.40 since 2010/2011. (8 % of government expenditure on health) this falls short of the government's commitment to the Abuja declaration of 15% budget spent on health and HSSIP target of 21% of total health expenditures. The recurrent expenditure by the government on EMHS remained almost unchanged at UGX 202 billion in 2010/2011 and UGX 219 billion in 2013/2014. With only around US$1 of the US$2.4 for medicines spent on general medicines (the rest largely on HIV, TB and malaria) the public suffers from lack of essential medicines. In addition, the strong dependence on donor funds (who fund another US$6 per capita per year) puts Uganda in a vulnerable position.

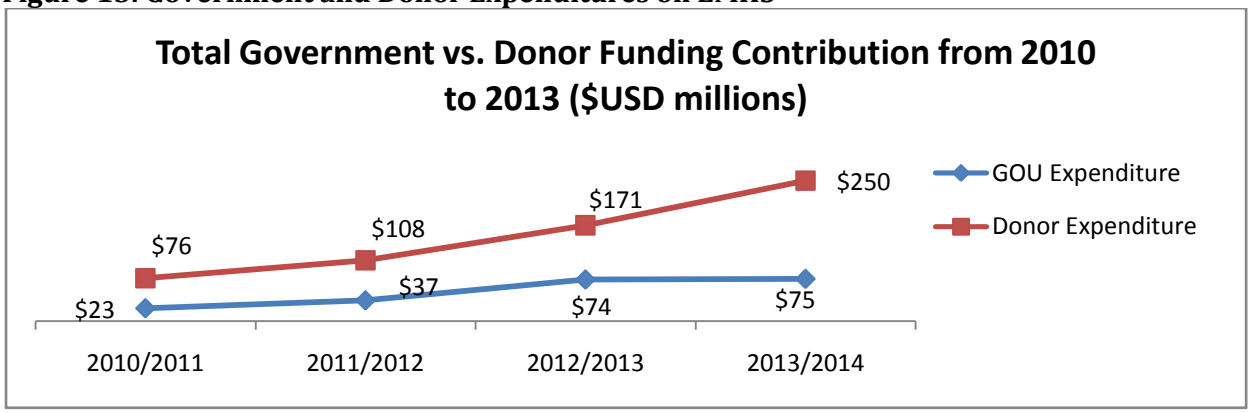
[6] *International Drug Price Indicator Guide (MSH, 2013). It compiles suppliers' and buyers' prices, International median buyer prices (including cost insurance and freight)*

Table 4: Trend in Government expenditure on EMHS

	2010/2011	2011/2012	2012/2013	2013/2014
Total population (million)	32	34	35	35
Total health expenditure (incl. donors) in billion UGX	660	799	854	1127.5
Total expenditure on EMHS (UGX)	258	377	636	846
Total expenditure on EMHS (US$)	99	145	245	325
Total expenditure on EMHS as % of total health expenditures	39%	47%	74%	75%
Per capita Government expenditure on EMHS (incl. ARVs, ACTs, TB supplies, and vaccines) in USD	2.4	2.3	2.4	2.4
Per capita Government expenditure on EMHS (excl. ARVs, ACTs, TB supplies, and vaccines) in USD	0.5	0.96	0.9	0.99
Government expenditure on EMHS (incl. ARVs, ACTs, TB supplies, and vaccines) in billion UGX	202	207	208	219.4
Government expenditure on EMHS (excl. ARVs, ACTs, TB supplies, and vaccines) in billion UGX	41	81	85	90
Government expenditure on EMHS as a % of total health expenditure (incl. ARVs, ACTs, TB supplies, and vaccines)	31%	26%	24%	19%
Government expenditure on EMHS as a % of total health expenditure (excl. ARVs, ACTs, TB supplies, and vaccines)	6%	10%	10%	8%

*** Source: GoU release to NMS (NMS Report) *Annual health sector performance report *HSSIP II report**
The figures above do not include off budget support.

Figure 15: Government and Donor Expenditures on EMHS



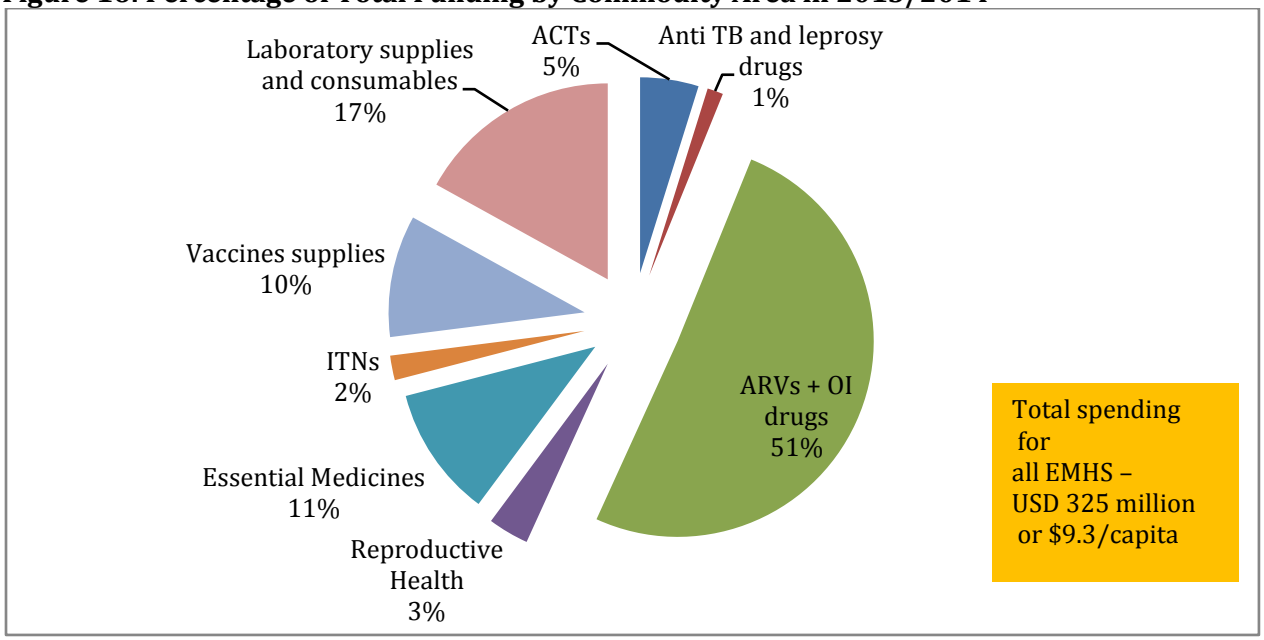
- Expenditure on all EMHS has more than tripled over the past four years, from $92 million in 2010/2011 to $325 million in 2013/2014. Government funding increased from $23m to $75m and donor funding from an estimated $76m to $250m during the period. In 2013/2014 the largest share of the expenditures was on ARVs and OI medicines (51%), followed by laboratory supplies and consumables, many of which are HIV and TB related (17%), essential medicines (11%); and vaccines (10%), see Table 5 and Fig. 16).

Table 5: Total Funding (Million US$) by Commodity Area from 2010 to 2014

	2010/2011	2011/2012	2012/2013	2013/2014
ACTs	$3	$4	$11	$16
AntiTB and Leprosy drugs		$4	$4	$4
ARVs + OI drugs	$40	$64	$141	$165
Reproductive Health	$9	$15	$17	$11
Essential Medicines	$18	$32	$34	$35
ITNs	$6	$4	$7	$7
Vaccines Supplies	$4	$3	$5	$33
Laboratory supplies and consumables	$12	$36	$23	$55
Total (Millions USD)	$92	$162	$242	$326

***Consolidated condoms, contraceptives, and RH commodities into Reproductive Health**
***Consolidated HIV related laboratory commodities and RDTs into Laboratory supplies and consumables**
***Consolidated ACTs, IRS, ITNs and Artesante IV into malaria commodities**

Figure 16: Percentage of Total Funding by Commodity Area in 2013/2014



- In 2013/2014 donor funding accounted for two-thirds of the total expenditures on all health commodities except for , essential medicines which is almost exclusively financed by the Government (94%). Between 2010/2011 and 2013/2014, government expenditures on EMHS, excluding ARVs, ACTs and TB medicines more than doubled from UGX 41 to UGX 90 billion. Expenditures for ARVs, ACTs and TB medicines were financed largely through global initiatives by development partners

Figure 17: Funding Sources per Commodity Area, 2013/2014 ($ USD, millions)

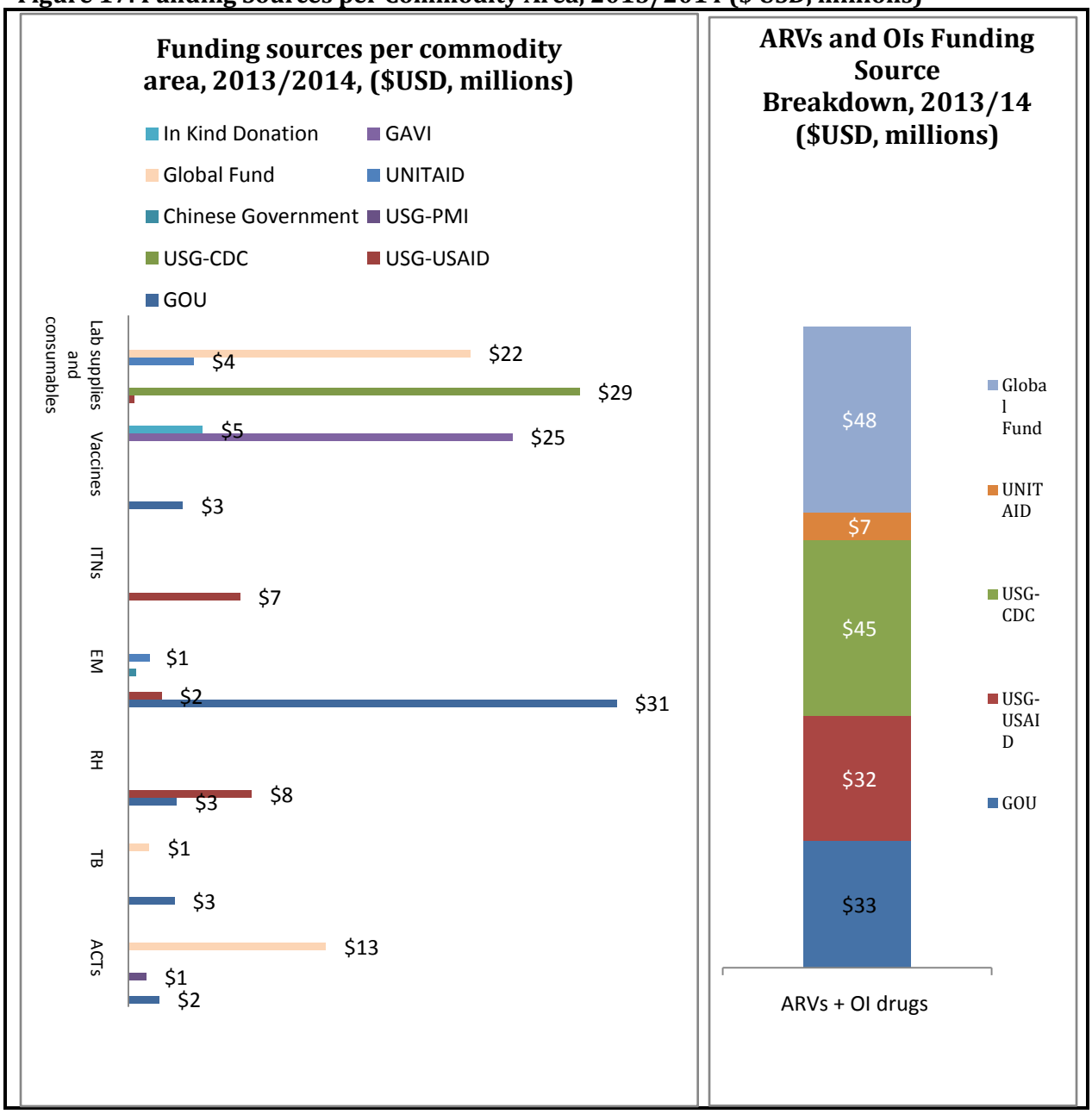
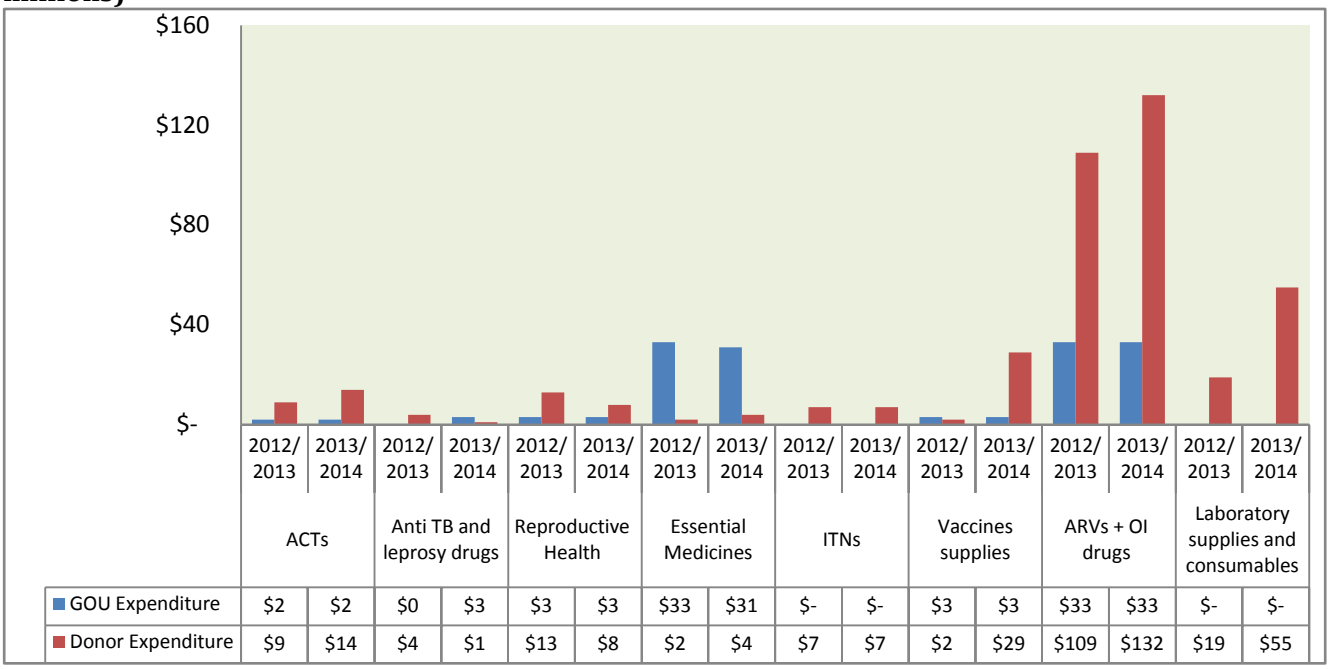


Figure 18: Government vs. Donor funding contribution in 2012/2013 and 2013/2014 ($USD, millions)



	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014	2012/2013	2013/2014
	ACTs		Anti TB and leprosy drugs		Reproductive Health		Essential Medicines		ITNs		Vaccines supplies		ARVs + OI drugs		Laboratory supplies and consumables	
GOU Expenditure	$2	$2	$0	$3	$3	$3	$33	$31	$-	$-	$3	$3	$33	$33	$-	$-
Donor Expenditure	$9	$14	$4	$1	$13	$8	$2	$4	$7	$7	$2	$29	$109	$132	$19	$55

- Despite the funding increases, the budget for EMHS still covers less than one-third of the needs; two-thirds of the total funding is dependent on donor funding specifically for HIV commodities, malaria and TB supplies.

Table 6: Funding Gap in 2011/2012 to 2013/2014

Commodity Type	Quantified Requirement (Need) (US$, Millions)	Total Resource Envelope (US$, Millions)	Government Contribution (US$, Millions)	Donor Contribution (USD, Millions)	Funding Gap (US$, Millions)	% of Estimated Requirement Financed
2011/2012						
ARVs + OIs	83	64	-	64	20	77%
EMHS	45	34	32	-	13	71%
HIV-Related Laboratory	22	19	0	19	3	88%
ACTs	11	4	-	4	6	43%
2012/2013						
ARVs + OIs	99	141	33	109	-42	143%
EMHS	50	34	33	2	16	68%
HIV-Related Laboratory	24	19	0	19	4	82%
ACTs	10	11	2	9	-1	111%
2013/2014						
ARVs + OIs	152	165	33	132	-13	108%
EMHS	55	35	31	4	20	63%
HIV-Related Laboratory	74	19	-	19	55	26%
ACTs	42	16	20	14	26	37%
Anti TB and leprosy drugs	2.8	4.3	2.9	1.3	-1.4	151%

*** Quantified requirement based on annual MoH estimated need for EMHS (HSSIP) * BoU rate of UGX 2600 * $USD in millions**

*** Source : For total resource envelope-Pharmaceutical Sector Survey, National Quantification Reports for Anti-Tuberculosis medicines, ARV's and Cotrimoxazole, Malaria reports.**

- According to the table, except for TB medicines and ARVs+OIs that had no expenditure gaps, there was large expenditure gaps for ACTs and HIV-related laboratory supplies of 63% and 64% respectively in 2013/2014.
- In the case of ARVs +OIs, the available funding in 2013/2014 exceeded the quantified need by 8%. However, not all the resources could be used to satisfy the public sector requirements as some of the available money was ring-fenced for the private sector which was exceeded over and above by 27% of the private sector need.

3.2.3 Allocation of EMHS Funds to the Health Facilities

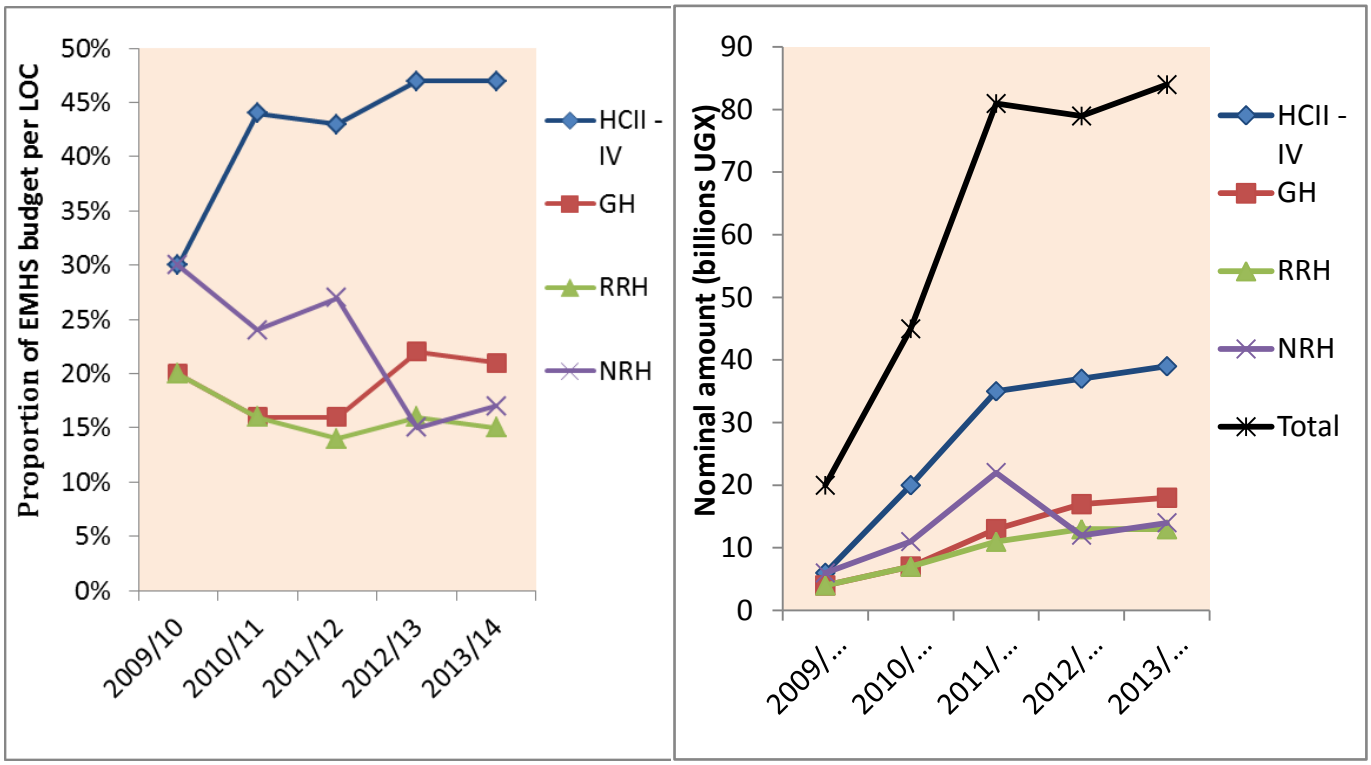
In 2010, financing for EMHS were consolidated into a single pool (Vote 116), managed at central level by MOFPED with NMS mandated to do all procurement for government health facilities. This financing arrangement has proven to be much more effective than the previous approach where districts were responsible for managing their EMHS funds. In Table 7, data from NMS shows that 100% of EMHS funds are now expended on EMHS procurement and distribution, a great improvement from only 59% being utilized as intended in 2009/2010.

At the same time, Uganda's HSSIP 2010/2011-2014/2015 mandated that 66% of the funding available for EMHS should be spent at district and community levels to promote primary health care. This prioritization was meant to ensure EMHS availability at the levels of care HCII to HCIV that serve as the entry point for the majority of patients where uncomplicated cases can be treated more cost effectively.

Table 7: Government Funds Allocated for Credit Line EMHS Distributed to Health Facilities (excluding ARVs, ACTs, vaccines, TB supplies, and RH commodities) in UGX billions

HEALTH FACILITY/LOC	2009/2010		2010/2011		2011/2012		2012/2013		2013/2014	
UGX Billion	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
DISTRICTS (HCII-HC4)	17	6	28	21	39	35	37	HC2-11 HC3-18 HCIV-8	HC2-11 HC3-18 HCIV-10	HC2-11 HC3-18 HCIV-9
GENERAL HOSPITALS	5	4	8	7	15	11	13	15	18	13
REGIONAL REFERRAL HOSPITALS	4	4	10	7	14	13	17	15	13	12
NATIONAL REFERRAL HOSPITALS	8	6	13	11	17	22	12	14	14	14
SPECIALIZED UNITS	-	-	-	-	-	-	22	22	16	16
Total	**34**	**20**	**59**	**46**	**85**	**81**	**101**	**103**	**100**	**93**

- The figure below confirms that the bulk of EMHS funds 47% are indeed being spent at HCII-HCIV facilities; this is up from 30% in 2009/10. This increased funding has improved EMHS availability at this level of care as was seen from data presented earlier. However, there is still a need to increase funding for PHC level to ensure full availability of essential commodities at all times.



3.3 Increased Safety, Efficacy, and Quality of Medicines and Health Supplies

Since 1993, NDA has been responsible for assessing medicines for the quality, safety, and efficacy; inspecting and licensing all pharmaceutical outlets in Uganda; and conducting sensitization on pharmacovigilance[7]. Previously, emphasis on inspection was given to the private sector retail pharmacies and drug shops but NDA, in collaboration with the MOH, has widened the scope to also inspect and certify public sector health facility pharmacies to improve quality of service delivery in the public sector.

Four indicators representing the safety, efficacy, and quality of health supplies are presented in the following section.

[7] *National Drug Authority Annual Performance report FY 2012/2013*

Safety and Efficacy

In 2005, NDA established 11 regional pharmacovigilance centers to conduct pharmacovigilance activities to promote patient safety by monitoring adverse drug reactions (ADR). Between 200 and 300 ADR reports have been submitted to NDA annually meaning that awareness on safety and adverse reactions has increased. It is important that NDA establishes mechanisms to investigate the ADR reports in order to protect patients from possible ill effects of unregistered, substandard or falsified products.

Table 8: Number of ADR Reports Submitted

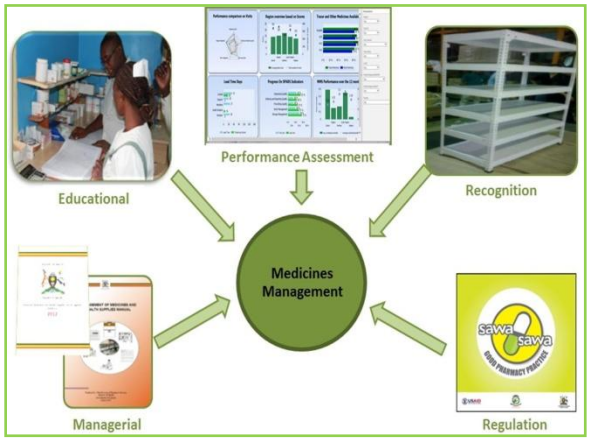
	2010/2011	2011/2012	2012/2013	2013/2014
Number of ADR reports submitted to NDA	268	396	238	273

3.3.2 Quality Assurance

Though quality assurance is broad, an important part of quality assurance is to conduct inspections of all facilities that handle pharmaceutical products throughout the country to ensure adherence to standard practices such as availability of qualified personnel, suitability of premises and ensure adherence to good manufacturing, distribution and pharmacy practices through regular inspections. Facilities that pass inspection are provided licenses. To ensure that the public and PNFP pharmacies meet the same standards as is required for private sector pharmacies and drug outlets, the good pharmaceutical practice (GPP) certification system was developed and implemented by the NDA. The SPARS intervention helps health facilities to meet and adhere the GPP standards. An increasing number of public sector health facilities are now inspected and certified for GPP.

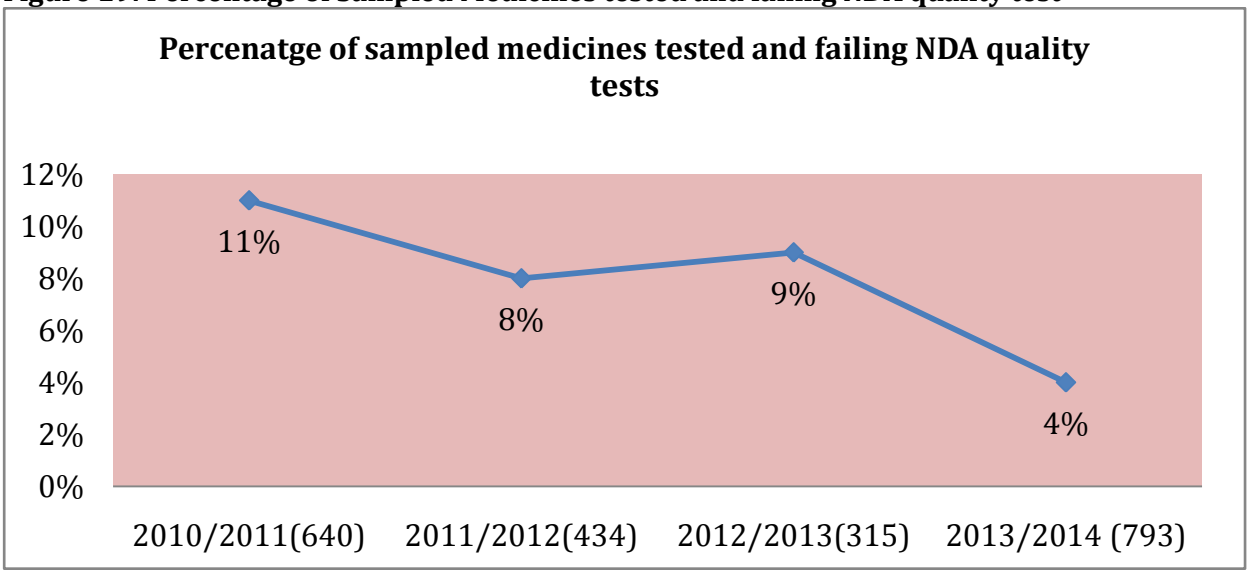
Table 9: Number of Public and Private Sector Pharmacies and Drug Shops Inspected Annually

	Private Sector		Public Sector
Year	**Pharmacies**	**Drug shops**	**Pharmacies in Health Facilities**
2010/2011	747	11,785	-
2011/2012	709	6,925	-
2012/2013	976	6,140	605
2013/2014	901	5984	1002



- Quality control is also an important part of the NDA's work. Products are tested on a regular basis and through post-market surveillance. The quality control of medical products moving in the Ugandan market is critical to ensure product quality throughout the supply chain and to detect counterfeit and or poor-quality drugs circulating in the market.
- Data provided by the NDA National Drug Quality Control Laboratory (NDQCL) shows a decline in the rate of medicines failing the quality tests. Quality testing is defined as medicines tested for compliance to pharmacopeia and chemical standards. There was 4% failure of 793 tests in 2013/14 compared to 11% in 2010/2011 of 640 tests. To further improve the quality of medicines in the market, NDA has published new good distribution guidelines (GDP) to regulate wholesaler standards and created an electronic imports system that links NDA's ports of entry staff information with information on registration, physical inspection and verification.

Figure 19: Percentage of Sampled Medicines tested and failing NDA quality test



3.4 Improved Appropriate Use of Medicines and Health Supplies

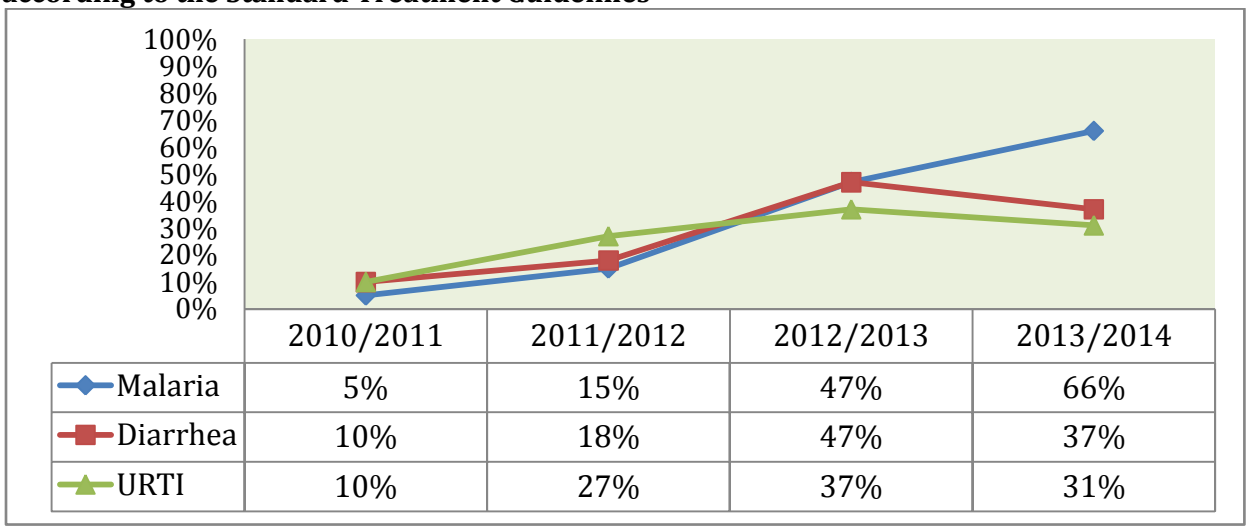
Improving medicines use through proper prescribing and dispensing practices ensures the best use of limited resources and optimal patient care. Otherwise, even if prescribed medicines are available for treatment, efforts and resources can be wasted if these medicines or incorrect dose or duration is prescribed wrongly or if not appropriately dispensed. Worldwide, more than 50% of all medicines prescribed, dispensed, and/or sold

are inappropriate, and half of the patients fail to take medicines correctly.[8] To assess appropriate medicines use, three indicators were measured: adherence to standard treatment guidelines, patient knowledge of medicines dispensed and adequacy of medicines labeling. Based on SPARS visits conducted, data was obtained from cases of diagnosis reviewed and treatment given, patients interviewed on knowledge of medicines and the labels assessed for correct labeling to indicate the dose, medicine name, patient name, strength, quantity, date and facility name.

3.4.1 Adherence to Standard Treatment Guidelines

To assess adherence to standard treatment guidelines the three most common diseases were used; Diarrhea (non bloody), mild acute respiratory infection (ARI), and uncomplicated malaria. Adherence to Uganda Clinical Guidelines (UCG) depends on diagnostic capacity and skills of the prescriber, as well as laboratory testing capacity. When diagnoses are uncertain, treatment becomes symptomatic , leading to non-adherence to the UCG. A recent World Bank report highlights the low capacity of health providers: only 20% of health workers can correctly diagnose 4 of 5 common diseases at primary health care level, and only 15% are able to correctly treat them.[9]

Figure 20: Percent of Cases Treated Appropriately for Malaria, Diarrhea, and Cough/Cold according to the Standard Treatment Guidelines



	2010/2011	2011/2012	2012/2013	2013/2014
Malaria	5%	15%	47%	66%
Diarrhea	10%	18%	47%	37%
URTI	10%	27%	37%	31%

***Appropriate Treatment for the three diseases**
***Malaria - Test conducted followed by ACT and paracetamol (test does not confirm whether it was positive or negative)**
***Diarrhea (no blood) - ORS, zinc, and Albendazole given. No antibiotics given.**
***Cough/Cold (non pneumonia) - No antibiotics given**

[8] *Promoting rational use of medicines-WHO September 2012*
According to the World Health Organization (WHO), rational use of medicines requires that "patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time and the lowest cost to them and their community," (WHO, 1985).

[9] *Service Delivery Indicators Initiative. Education and Health Services in UGANDA: Data for Results and Accountability. November 2013. Washington, DC: The World Bank.*

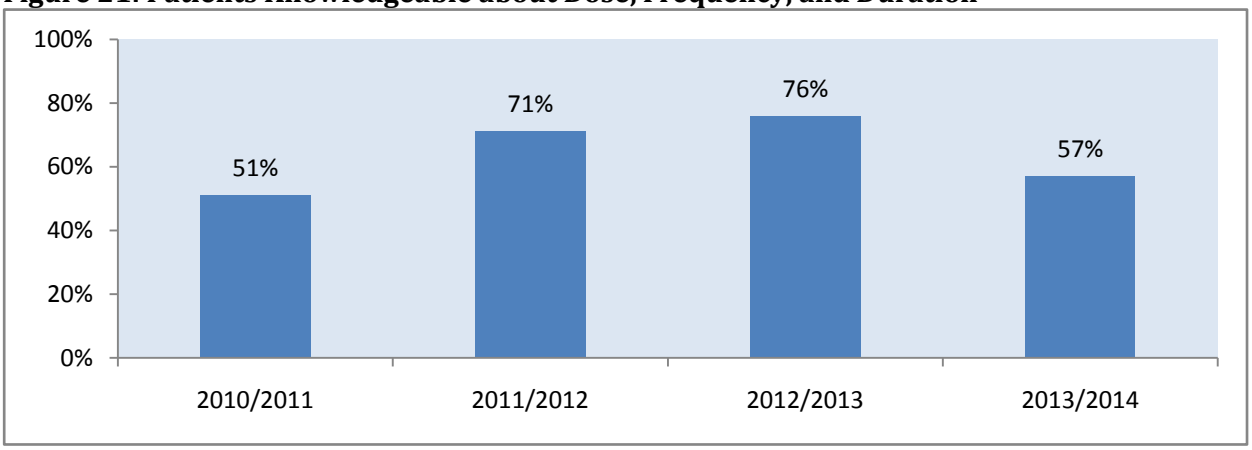
- Adherence to standard treatment guidelines (STGs) for all three diseases has improved greatly, particularly for malaria. While the SPARS data may be accurate for the cases reviewed, another malaria survey (End User Verification) carried out in 2014 by the Pharmacy Division and National Malaria Control Program with PMI support, showed an increase in malaria cases given an ACT and equally an increase in the proportion of children under five who tested negative for malaria were still given ACTs. (*80% of negative cases treated with ACTs*). This is a huge waste of resources and could contribute to limiting the effectiveness of ACTs through resistance.

Patient Care Indicators

Indicator 18. Percent of Patients Knowledgeable about dosage and duration of medicines dispensed

Patient knowledge of medicines use is a WHO/International Network for Rational Use of Drug indicator that assesses patients' understanding of how and why they should take their prescribed medicine. To assess patients knowledge, they are interviewed on how much (dose), how often (frequency), and how long (duration) they must take their medicines. This knowledge is supposed to be clearly communicated by the dispensing staff and corresponds with the labeling on a dispensing envelope where the information is indicated.

Figure 21: Patients Knowledgeable about Dose, Frequency, and Duration

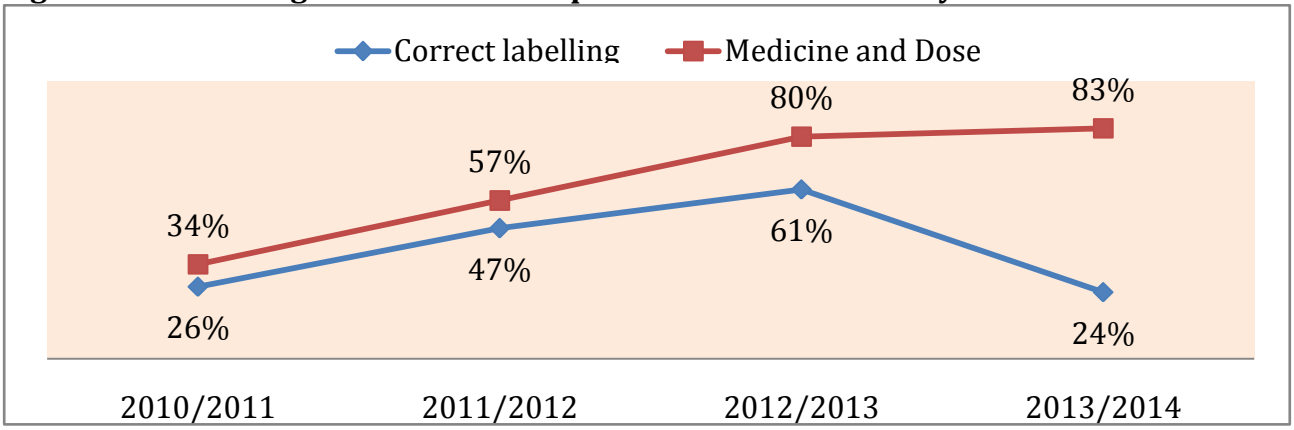


- Only 57% of the patients surveyed during SPARS visits could correctly state the dosage, frequency and duration of time they should take their medicines. This is a significant decline from the previous year where three out of four patients knew about their medicines. The reasons behind this decline need to be explored and corrective actions taken.

Indicator 19. Percentage of Medicines Dispensed that are Correctly Labeled

Correct labeling should indicate the dose, medicine name, patient name, strength, quantity, date and facility name. Supervisors examine patient medicines to assess if all the above elements are included on the medicine labels. The findings indicate that all these elements are not included in the labels with emphasis placed on indicating the medicine name and dosage.

Figure 22: Percentage of Medicines Dispensed That Are Correctly Labeled



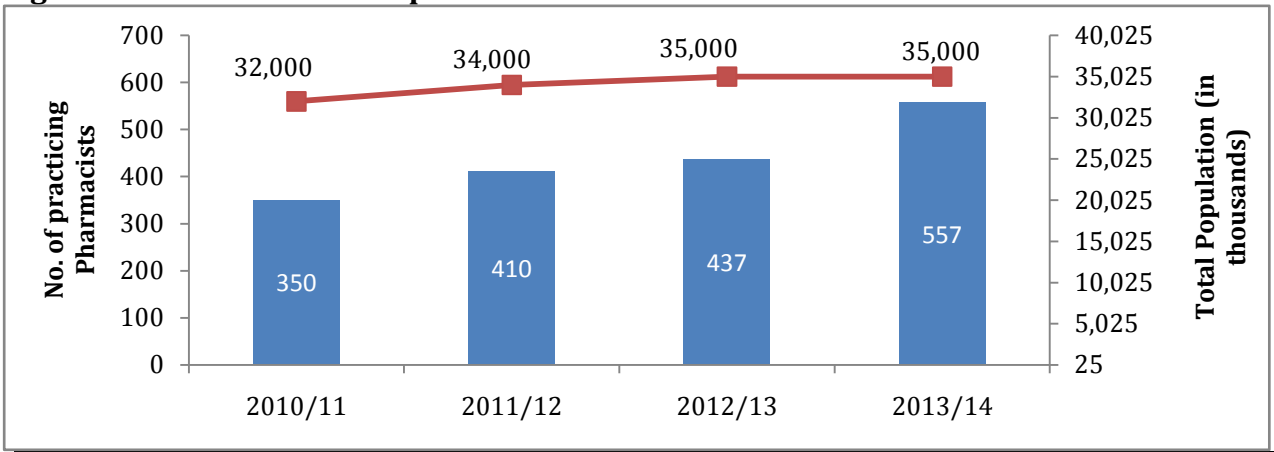
3.5 Strengthened Human Resources in the Pharmaceutical Sector

The health sector is committed to attaining and maintaining equally sized workforce in the pharmaceutical sector, equitably distributed, appropriately skilled, motivated and productive .[10] Although a comprehensive human resources for health (HRH) policy and strategy is in place and training of health workers has improved in recent years, the shortage of health workers, including pharmacy professionals and their unequal distribution remain major obstacles to access to quality care, particularly in rural areas (Uganda Ministry of Health, 2011: XVIII).[11] In the Pharmaceutical sector, two indicators have been used to monitor human resources: the number of pharmacy professionals and positions filled in government settings.

[10] *Annual Health Sector Performance Report. Pg. 16, 2013/2014.*
[11] *The health worker crisis: an analysis of the issues and main international responses, pg 21.*

Increased Number of Pharmacy Professionals in the Country

Figure 23: Pharmacist to Population Ratio



Pharmacists per 100,000 Population	**1.1**	**1.2**	**1.2**	**1.6**

- 2013/2014 saw a sizeable increase in the practicing pharmacists with the proportion of pharmacists per population increasing from 1.1 pharmacists per 100,000 people in 2010/2011 to 1.6 pharmacists per 100,000 people in 2013/14[12]. This is within the same ratio with other sub-Saharan African countries with 1.1 pharmacists per 100,000 people.[13] However the ratio is still low and there is much to desire in terms of increasing the pharmaceutical workforce.

Pharmacists and Pharmacy Technician positions Fully Filled in the Public Sector

Table 10: Pharmacists and Pharmacy Technicians Positions Fully Filled in the Public

Year	2011/2012		2012/2013		2013/2014	
Cadre	Pharmacist	Dispenser	Pharmacist	Dispenser	Pharmacist	Dispenser
Total staffing norm	77	71	86	369	376	369
Total no. of posts filled	42	42	22	137	31	233
% filled	55%	59%	26%	37%	8%	61%

Note: the terms 'Dispenser' and 'Pharmacy Technician' are used synonymously in the document

12 For every 100,000 citizens there are only 8 physicians, 55 nurses, 1.3 pharmacists, and 16 midwives, who are mainly concentrated in urban areas, World Health Organization. Statistical Information. Geneva: WHO, 2007.

13 Elish et al (2008) concluded that the human resource problem in the health sector in sub-Saharan Africa has reached crisis proportions in many countries, though the gravity of the problem varies across the region. The health personnel to population ratio in Africa has always lagged behind the rest of the world, particularly for pharmacists and pharmacy technicians. Thirty-seven out of 47 sub-Saharan African countries had 1.1 pharmacists per 100,000 people in 2002.

- Over the three year period, it's apparent that the number of pharmacy posts (Pharmacist and Dispensers) created has increased but the filled posts reducing both in actual terms and in fill rate.[14] In 2010/2011 the fill rate of pharmacy posts was 55% indicating that slightly over half of all pharmacist position was filled. In 2013/2014, with the increase in position, the fill rate dropped to 8 % indicating that only 1 in twelve positions are filled. This gap of skilled pharmacists and pharmacy technicians impacts on the quality of health care services provided. This has resulted in task shifting to other cadres. Even with the efforts made by Government of Uganda to recruit additional health workers and increase the human resource budget from UGX 124 billion 2009/2010 to UGX 229 billion in 2013/2014[15] , it still remains inadequate to attract and retain sufficient pharmaceutical staff.

[14] *Pharmaceutical Sector Survey*
Human Resources for Health Bi-annual report(April-September 2012)
Annual Health Sector Performance Report FY 2013/2014
[15] *Annual Health Sector Report 2013/2014, pg. 21.*

4. CONCLUSIONS

The report shows that the pharmaceutical sector has made considerable progress in a number of key areas towards achieving the HSSIP/NPSSP II targets. The data presented in this report indicate that strategies such as SPARS, re-introduction of the kit system at lower level facilities, consolidation and prioritization of EMHS financing for lower levels of care, and last mile delivery have had a positive impact on the availability; all increase availability of EMHS at end user level. However, the uneven or limited progress in some areas means that new strategies and interventions must be developed and implemented if the national goals for the pharmaceutical sector are to be achieved.

In the area of affordability and financing of EMHS, the priority challenges include establishing alternative financing sources, equity of financing allocations, prioritizing use of resources (VEN concept) and building stronger capacity at facility level in pharmaceutical financial management.

To improve appropriate use of EMHS, effective strategies are needed to address substandard dispensing and prescribing practices, and public education about medicines.

In the area of safety, efficacy and quality of EMHS, commitment to implementing the good distribution practices guidelines is needed and enforcement by building the capacity of NDA to expand their quality assurance program activities.

Although the pharmaceutical work force has increased, it is still inadequate; there are challenges of geographical distribution with a preference for the urban areas compared to rural areas, the remuneration is not competitive to motivate the pharmacists and the numbers are not adequate to fill the available posts. The sector therefore needs to review the strategies to address the imbalances, increase responsibility for planning and overseeing the development, training, team building and career planning of human resources needed in the pharmaceutical sector.