FINANCING FOR INCLUSIVE AND SUSTAINABLE HEALTH SERVICES

Uganda Health Public Expenditure Review 2013/14 – 2016/17

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THE REPUBLIC OF UGANDA

CONTENTS

ACRONYMS

ABCE	Access, Bottlenecks, Costs, and Equity (project)
ABPC	Annual Budget Performance Contracts
ACT	Artemisinin-based Combination Therapies
ANC	Antenatal Care Visits
APA	Annual Performance Agreements
ART	Antiretroviral Therapy
ARV	Antiretroviral (drugs)
BCG	Bacille Calmette-Guérin
BOU	Bank of Uganda
CDC	Centers for Disease Control and Prevention
cMYP	Comprehensive EPI Multi Year Plan
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cardiovascular Disease
CVS	Central Vaccine Stores
DHIS2	District Health Information Software System version 2
EPI	Expanded Program on Immunization
EVM	Effective Vaccine Management
FP	Family Planning
FY	Financial Year
GAVI	Global Alliance for Vaccines and Immunization
GOU	Government of Uganda
HC	Health Center
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HLG	Higher Local Government
HMIS	Health Management Information System
HPV	Human Papilloma Virus
HR	Human Resource
HSD	Health Sub District
HSDP	Health Sector Development Plan
ICAN	Immunization Costing Action Network
ICT	Information and Communication Technologies
IFMS	Integrated Financial Management System

IMF	International Monetary Fund
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Net
KSh	Kenya Shillings
LG	Local Government
LIC	Low Income Countries
LPFM II	Leadership in Public Financial Management II
MMR	Maternal Mortality Rates
MOFPED	Ministry of Finance, Planning and Economic Development
MOH	Ministry of Health
NCD	Non Communicable Diseases
NHA	National Health Accounts
NITAG	National Immunization Technical Advisory Group
NDP II	Second National Development Plan
NMS	National Medical Stores
NSP	National HIV and AIDS Strategic Plan 2015/16 – 2019/20
OOB	Output Oriented Budgeting
OOP	Out of Pocket (expenditures)
PCV	Pneumococcal Conjugate Vaccine
PBB	Programme Based Budgeting
PBS	Programme Budgeting System
PER	Public Expenditure Review
PHC	Primary Health Care (grants)
PNFP	Private Not For Profit
PFM	Public Financial Management
PMI	President's Malaria Initiative
RBF	Results Based Financing
RFP	Request for Proposal
RRH	Regional Referral Hospital
SDG	Sustainable Development Goal
SOW	Scope of Work
SSA	Sub- Saharan Africa
STD	Sexually Transmitted Disease
TB	Tuberculosis
THE	Total Health Expenditure
UBOS	Uganda Bureau of Statistics
UGX	Uganda Shillings

UHC	Universal Health Coverage
UNEPI	Uganda National Expanded Program on Immunization
USAID	United States Agency for International Development
WEO	World Economic Outlook
WHO	World Health Organisation

ACKNOWLEDGEMENTS

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In particular, the team would like to thank Commissioner Sarah Byakika and Assistant Commissioner Thomas Aliti of the Planning Department for their guidance and input throughout the process, as well as Aliya Walimbwa, Swaleh Sebina, Expeditus Ahimbisibwe, Brenda Apio, Eriya Kategaya, and Spollah Ajua (all MOH) who were active participants during consultative site visits to health sector counterparts in the districts. Significant inputs, advice and support was provided by John Kauta, Enock Mwami (USAID SPEHB) throughout the process, and Patrick Kandole and Benon Tumwine who supported additional district field visits to ensure a more representative set of insights at the sub-national level.

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EXECUTIVE SUMMARY

Uganda has made remarkable progress over the past decade on improving health outcomes and increasing the reach of its public health programming. Among the more remarkable achievements are:

- Reduction in annual HIV/AIDS related deaths from about 76,000 in 2006 to 20,000 in 2016.
- Decrease in infant mortality from 76 to 43 per 1,000 live births between 2006 and 2016, and reduction in maternal mortality from 435 in 2006 to 336 per 100,000 in 2016.
- Introduction of several new life saving vaccines, including the pneumococcal conjugate vaccine (PCV) in 2013-14 and the human papilloma virus (HPV) vaccine in 2015.

Despite this progress, Uganda's health system confronts a number of major challenges in meeting its goal of achieving Universal Health Coverage (UHC) with the essential services needed to ensure the health and productivity of its population. Relative to other Low Income Countries (LICs) and the regional average for Sub-Saharan Africa (SSA), Uganda has a high prevalence of both communicable diseases such as HIV/AIDS and malaria, and non-communicable diseases (NCDs). Uganda also has a relatively young population, with about 48.6 percent of its populations being under the age of 15 compared to an average of about 43.5 percent for LICs and other SSA countries. Investment in Uganda's health system are critical to the achievement of Uganda Vision 2040 goals and the implementation of the Health Sector Development Plan (HSDP).

Public spending on the health sector remains low, and Uganda remains highly dependent on donor funding to meet its health sector challenges. The 2015/16-2019/20 Health Sector Development Plan (HSDP) targets allocating 15 percent of the GOU budget to the health sector. Uganda only devoted about 8 percent of its actual public spending on the health sector on average between FY2012/13 and FY2016/17. On a per capita basis, GOU spends about UGX 23,000 ($8.20) per capita (2015/16 NHA) compared to the WHO target of about $34 per capita. GOU health funding represents about 1 percent of GDP against an average of 1.9 percent for Sub-Saharan African countries.

SECTORAL FINANCIAL MANAGEMENT GOVERNANCE

The last decade has seen significant PFM reforms for the health sector and for the country as a whole. In FY2008/09 the government shifted from line-item (or input-based) budgeting to Output Oriented Budgeting (OOB). The GOU rolled out the Integrated Financial Management System (IFMS) to all central government entities (LG rollout is ongoing) and also adopted a Treasury Single Account (TSA). The Public Finance Management Act of 2015 and its accompanying regulations introduced numerous changes in public financial management (PFM) processes and procedures, including the introduction of a new budget calendar. More recently, GOU rolled out Programme Based Budgeting (PBB) at the central government level for FY2017/18 and at the sub-national level for FY2018/19. The health sector has also been working with the World Bank and other sectors to pilot Results Based Financing schemes to improve performance at the health unit level. While these reforms promise to improve the PFM system,

the quick pace of change in the country has left some entities struggling to keep up, and many officials seem to suffer from reform fatigue -- straining the human and technical resources necessary for implementation.

PRIORITY SERVICE DELIVERY AREAS

HIV/AIDS Prevention and Treatment. GOU HIV/AIDS funding fell from about UGX 215 trillion in FY 11/12 to about UGX 127 trillion in FY 14/15, rebounding slightly to UGX 150 trillion in FY15/16. This represents a 30 percent decrease in funding over the period, despite the effects of population growth, increasing prices, and depreciation of the exchange rate on service delivery costs.

This drop in GOU funding appears to be due in part to crowding out by development partner funds. Between FY 12/13 and FY 15/16, development partner funding for HIV/AIDS rose 35 percent from UGX 1,138 trillion to UGX 1,622 trillion. On average over the period, donors contributed about 81 percent of funding for HIV/AIDS, compared to 10 percent from GOU and 9 percent from private sources. This raises concerns regarding the sustainability of HIV/AIDS service delivery.

The cost-efficiency of HIV/AIDS treatment appears to be driven by pharmaceuticals and laboratory service costs. ARVs account for 44 to 66 percent of service delivery costs, while other drugs and laboratory costs represented 4-15 percent and 2-13 percent of costs, respectively depending on the drug regimen. Public hospitals had about 12 percent higher costs per adult patient than private hospitals; however, public health centers (HCs) tend to have much lower cost per adult patient than private HCs. This indicates some potential to leverage more efficient models of service delivery for HIV/AIDS treatment.

Despite expanded ART coverage, high condom use and HIV test rates, HIV incidence (adults 15 – 49 years) increased from about 5.3 per 1000 population in 2012 to 5.7 per 1000 population by 2016. HIV prevalence also rose across all age-groups from 6.5 percent in 2012 to 7.0 percent by the end of 2016. Prevalence is especially high among women aged 15 – 49 years at 8.3 percent, up from 7.7 percent in 2012. These trends indicate that the interventions as rolled out have been largely ineffective in controlling new HIV- infections. However, the country has been able to stabilize HIV/AIDS mortality rates from about 60,000 deaths in 2012 to 20,000 deaths per annum as of 2016. While coverage of HIV/AIDS service delivery has expanded, some groups of the population appear to have less access to HIV/AIDS treatment and control measures.

Malaria Prevention and Control. Malaria is a major public health problem in Uganda and remains a leading cause of morbidity in health facilities. While government allocations to malaria rose between FY10/11 and FY14/15, they decreased in FY15/16. GOU funding has been relatively limited over the whole period, representing 10 percent of total malaria funding on average. Households represented about 67 percent of funding, while donors represented about 23 percent on average. There is clear evidence of declining donor support for the malaria program yet there is no indication that the government is replacing donor funds with its own funds.

Much of the envelope of funding for malaria control and treatment is directed toward human resources and technical assistance to the detriment of treatment and prevention programs. While this support has

resulted in strong improvement in malaria reporting (DHS 2015/16), progress on improving key indicators such as case incidence, admissions, and mortality is mixed. There is a positive relationship between increased spending and the reported availability of insecticide treated nets. Increased spending does not, however have a strong direct relationship with reduced inpatient malaria deaths. Gaps in the availability of medicines and testing materials at the facility level may explain some of the mixed results on effectiveness of malaria prevention and treatment programs.

Maternal and Child Health. The government has devoted significant resources toward maternal and child health programs relative to other service delivery priorities. Overall, maternal and child health programs received 16.2 percent of government health funds, trailing only HIV/AIDS and oral conditions under NCDs, and exceeding malaria. Moreover, the proportion of spending that maternal and child health receives overall has been increasing between FY 12/13 and FY 15/16. Although a significant portion of government spending is dedicated to maternal and child health issues, households (private sources) bear the majority of costs for service delivery in this area.

While unit costs are not available across the full range of maternal and child health services, analysis of facility level data on the costs of delivery demonstrates a wide variety of costs. Overall, Uganda has a lower average cost of a delivery when compared with other countries in Sub-Saharan Africa. Within Uganda, average costs of birth varies greatly by type of health facility. This difference may be due to a range of issues. For example, hospitals may tend to attract the more complicated births due to their staff and equipment, leading to higher average costs. There may also be lessons that can be learned on more routine deliveries, for example related to the greater reliance on mid-wives in health facilities.

Recent data show significant reductions in child and maternal mortality rates, pointing to the effectiveness of maternal and child health interventions. From 2000 through 2017, under 5 (U-5) mortality dropped from 151/1000 live births to 64/1000 live births. Over the same period, child mortality dropped from 88/1000 to 43/1000 live births, and infant mortality declined from 69/1000 to 22/1000 live births. In the meantime, maternal mortality per 100,000 live births decreased from 435 in 2006 to 336 in 2016. The full impact of maternal and child health interventions may be limited due to a lack of appropriate equipment and materials at the facility level. There also remain significant gaps in access to care between those in urban and rural areas, and those in higher and lower income brackets.

Immunization. Immunization programs in Uganda have expanded rapidly over the past several years, though much of the expansion is due to donor funding. Total funding for immunizations rose by 304 percent between 2012 and 2016 from UGX 70.4 billion to UGX 284.1 billion. This was due to expansion of existing immunization campaigns and introduction of new vaccines, such as the PCV vaccine in 2013-14 and the HPV vaccine in 2015. GOU funding increased by 21 percent over the period, and went from representing about 65 percent of funding for immunization in 2012 to about 19 percent in 2016. The current importance of donor funding for immunization service delivery creates risks related to the sustainability of the program. In years when development partner funding has been lower, GOU funding has not been available to fill the gap. There are also risks associated with skilled staff being paid by donor-funded projects, notably at the Uganda Virus Research Institute (UVRI).

Information gathered to assess the costs of the introduction of the Pneumococcal Conjugate Vaccine (PCV 10) provide some insights on the cost efficiency of immunization delivery in Uganda. Results from

a detailed costing study related to this roll-out found that while most of the surveyed health facilities had a costs per dose between $4.23 and $4.84, two of the ten facilities studied had costs exceed $6 per dose. Uganda's cost per dose of this vaccine was about 19.5 percent higher than that of Zambia.

While vaccine coverage of all basic vaccinations expanded between 2011 and 2016, coverage is still below 60 percent. The coverage of all-age appropriate vaccinations is significantly lower, at about 36 percent across the whole DHS sample. These low levels of coverage are likely to slow progress if not have a negative influence on child survival. There are some disparities in vaccine coverage with respect to region, but difference by wealth, urban/rural, and gender are very small. The best performing regions in terms of overall vaccine coverage is Karamoja, which is one of the poorest regions in Uganda, which indicates that poverty and vaccine coverage are not strongly linked.

Non-Communicable Diseases. Uganda is facing a significant rise in NCDs resulting from a combination of several factors including urbanization, adoption of unhealthy lifestyles, increasing aging population, and metabolic side effects of lifelong antiretroviral treatment. Funding for NCDs has increased in recent years from about UGX 220 billion in FY 12/13 to about UGX 621 billion in FY 15/16. Overall, GOU dedicates about 25.7 percent of government resources toward NCDs. The allocation of these funds, however seems to be focused on oral diseases rather than those that impose a greater impact in terms of loss of life. According to NHA data, financing of oral diseases represented 18.9 percent of GOU spending on health overall in 2015/16, and more than two-thirds of spending on NCDs. By comparison, oral diseases represented only about 0.2 percent of disability adjusted life years (DALYs) lost over the period, and 0.9 percent of those associated with NCDs.

There is also a wide range of costs for delivery of NCD services across different health facilities. A 2015 study found that the cost per visit of a visit related to diabetes ranged from US$1.44 to US$11.76 among HC III facilities in their sample, and were about US$3.63 and US$2.20, respectively, at HC IVs and Hospitals. This indicates both the variety of services that health facilities offer (some visits may be less expensive because there are not adequate supplies and laboratory equipment), as well as the potential to adopt cost savings mechanisms to promote better use of scarce resource.

Health facilities appear to have a reasonable capacity to deal with infectious diseases but lack the sophisticated equipment and medications to effectively diagnose and treat NCDs. This gap is most felt in the lowest level health facilities that serve low income and largely rural communities, indicating issues of inequity in access to NCD services between rural and urban areas and between the rich and poor.

CONCLUSIONS

Uganda has made remarkable progress over the past decade on improving health outcomes and increasing the reach of its public health programming. Looking toward the future, to ensure the sustainability of these gains, GOU will need to identify opportunities to mobilize additional domestic resources to support health service delivery. This transition may take a number of years, with domestic funding gradually increasing. More broadly, the health sector will need to find opportunities to use existing resources more efficiently, and to fully implement their approved budgets. This will require the implementation of a range of measures – some of which support the whole sector, and others that are specific to certain service delivery areas.

The following represent some of the major findings of the PER, including areas that will promote more efficient and equitable use of government resources.

Cross-cutting and sector governance

- Improve the sustainability of health financing by increasing GOU funding to the health sector consistent with international standards and the levels funded by regional comparator countries.
- Better account for inflation and exchange rate fluctuations in planning sector resources, including with respect to multi-year capital projects.
- Improve the design of MOH programme structure to better align with major service delivery areas, such maternal and child health, and HIV/AIDs or malaria prevention and treatment, and strengthen KPIs to more directly inform management decision making.[1]
- Develop a comprehensive database for capital expenditure projects to better budget for co-financing of multi-year donor funded projects and to better account for recurrent costs of capital projects.
- Consider re-aligning the weighting of criteria for distribution of non-wage recurrent PHC grants to better account for geographic and demographic challenges of districts not accounted for within the population related criteria.[2]
- Work with MOFPED to continue to ensure timely release of funds, and with MOH and districts to ensure timely transfer of funds to institutions and facilities receiving grants or transfers under their purview.
- Review and streamline internal control processes and conduct risk assessment to minimize pre-payment audit and expedite payment of low risk transactions, such as those falling under a certain threshold value.
- Implement measure to more proactively initiate recruitments, and continue to review compensation for health sector workers to expedite recruitment and improve retention.
- Institutionalize the National Health Accounts and expand efforts to use the data to reinforce analysis of the effectiveness of health programs and expenditure.

[1] USAID SPEHB is providing some technical assistance on this topic. The current programme structure is mandated by MOFPED and there is a limitation in changing this until the new financial year starts. MOH has also recently agreed with MOPS on a new organizational structure which calls for a new programme structure that can only be implemented in FY 2019/20 Budget.
[2] While the FY2018/19 criteria for distribution of non-wage recurrent PHC grants notes the need to consider the geographic conditions of more remote areas of the country, it does not adjust the weighting provided to far to reach areas from previous years.

Service delivery

HIV/AIDS and Tuberculosis

- GOU spending on HIV/AIDS and TB appears to have been crowded out by increased donor spending. GOU should continue its efforts to increase domestic resources for HIV/AIDS to avoid losing the significant gains in reducing HIV/AIDS prevalence and mortality, including through the funding of the HIV/AIDS trust fund.

- Continue exploring options to increase the efficiency of HIV/AIDS service delivery, such as promoting bulk purchasing of ARVs on the international market to lower unit costs, identify options to contain the costs of laboratory services, and explore innovative service delivery models that efficiently use the time of health care professionals.

Malaria

- Reinforce domestic funding for malaria activities, both by increasing the level of GOU funding and by allocating more of the GOU resources directly toward treatment and prevention activities.

- Increase funding at the service delivery level available for the purchase of equipment and supplies to provide malaria health services, particularly for HC III and below which are the front lines for malaria prevention and treatment services.

- Support initiatives to reduce the unit costs of malaria medicines and treatments, particularly for ACTs, in both public and private facilities and promote more targeted use of anti-malarials to improve the efficiency of treatments.

Maternal and Child Health

- Consolidate gains in reducing maternal and child mortality by maintaining or increasing GOU funding, and expanding the use of cost-efficient service delivery options – such as the use of mid-wives for routine delivery.

- Increase investment to ensure all health facilities have adequate equipment for at least routine deliveries.

- Identify root causes of regional differences in uptake of maternal health services and address them appropriately.

Immunization

- Implement the recommendations of the Immunization Program Financial Sustainability Plan, including increasing the share of funding for immunization from domestic sources.

- Continue the use of pooled procurement mechanisms for vaccines to achieve economies of scale in procurement.

- Identify and roll-out good practice by health facilities demonstrating a lower cost per dose of delivering vaccines, while maintaining delivery models that are appropriate to the demographic group being targeted.

- Where efficient, implement strategies to reduce vaccine wastage, for example by optimizing the vial sizes based on the vaccines administered and the distribution method (e.g., to fit both smaller vaccine session sizes and mass vaccination campaigns).

NCDs

- Re-align GOU funds toward NCDs with a large disease burden on the population.

- Identify options to incentivize LGs to make needed investments in equipment and supplies needed to identify and monitor NCDs at the HC III and HC IV levels and to provide training to medical staff to deal with high burden NCDs.

INTRODUCTION[3]

Uganda has made remarkable progress over the past decade on improving health outcomes and increasing the reach of its public health programming. For example, between 2006 and 2016, Uganda reduced its annual HIV/AIDS related deaths from about 76,000 in 2006 to 28,000 in 2016.[4] Similarly, Uganda worked to bring down infant mortality from 76 to 43 per 1,000 live births between 2006 and 2016, and reduced maternal mortality from 435 in 2006 to 336 per 100,000 in 2016. Uganda has also pushed to introduce new technologies and approaches, for example by the introduction of several new life saving vaccines, including the pneumococcal conjugate vaccine (PCV) in 2013-14 and the human papilloma virus (HPV) vaccine in 2015.

Despite this progress, Uganda's health system confronts a number of major challenges in meeting its goal of achieving Universal Health Coverage (UHC) with the essential services needed to ensure the health and productivity of its population. Relative to other Low Income Countries (LICs) and the regional average for Sub-Saharan Africa (SSA), Uganda has a high prevalence of both communicable diseases such a HIV/AIDS and malaria and non-communicable diseases (NCDs) (Table 1). Uganda also has a relatively young population, with about 48.6 percent of its populations being under the age of 15 compared to an average of about 43.5 percent for LICs and other SSA countries. This, coupled with relatively high population growth, will result in Uganda needing to make significant investments in early childhood interventions such as immunizations to help their young population get off to a healthy start in life.

Table 1 – Selected Health and Demographic Data, Uganda against comparator groups (latest available)

	Uganda	Low Income Countries	Sub-Saharan Africa
Mortality from major NCDs[5] (% ages 30-70) (2017)	22.0	21.6	21.4
Prevalence of HIV, total (% of population ages 15-49) (2016)	6.5	2.7	4.3
Incidence of malaria (per 1,000 population at risk) (2015)	218.3	193.8	234.3
Percent of population under 15 (2016)	48.6	43.4	43.5
Population growth (% change) (2016)	3.3	2.7	2.7

Source: World Development Indicators (May 2018 update)

This Public Expenditure Review (PER) examines how the Government of Uganda (GOU) has directed public resources of the past four years to help address these challenges, in cooperation with development partners and private sources of funding. This analysis aims to provide key insights to GOU on opportunities to promote more effective and efficient use of limited health funding, and to demonstrate how the wealth of data and information on health spending, service delivery outputs and outcomes might be harnessed to help inform decision-making through similar efforts in the future.

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3 This review was authored by a team funded under the USAID Leadership in Public Financial Management II (LPFM II) Project including Janine Mans, Vincent Okungu, and Joseph McGrann

4 UNAIDS http://www.unaids.org/en/regionscountries/countries/uganda

5 Such as cardiovascular disease, cancer, diabetes or chronic respiratory disease

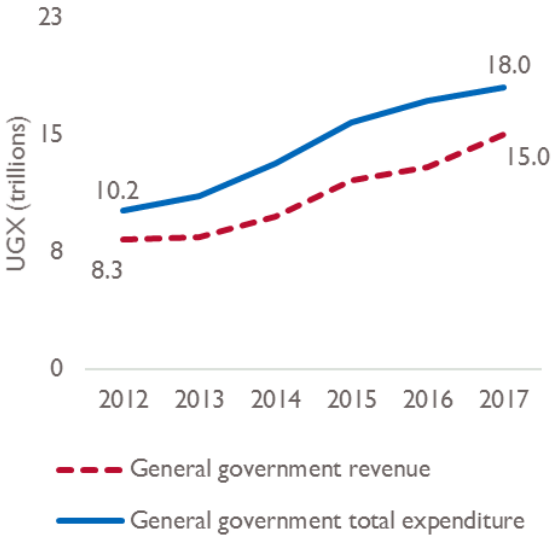
The analysis begins with a review of the macro-economic and fiscal environment over this period, followed by a review of major health sector financing and financial management governance trends. This is followed by a more detailed analysis of financing and service delivery for five major service delivery areas – including prevention and treatment of HIV/AIDs, tuberculosis, maternal and child health, malaria, and NCDs. This analysis explores issues of service delivery effectiveness, efficiency and equity. More details on the methodology used in the analysis and the major sources of data is provided in Annex 2.

MACROECONOMIC AND FISCAL TRENDS

Uganda's National Development Plan II (NDP II)[6] aims to propel the country into middle-income status by 2020. Implementation of this, and of the predecessor development plan, has set ambitious development goals and precipitated a relatively rapid expansion of government spending. Strong population growth and inflation over the period have reinforced the impetus for greater government spending.

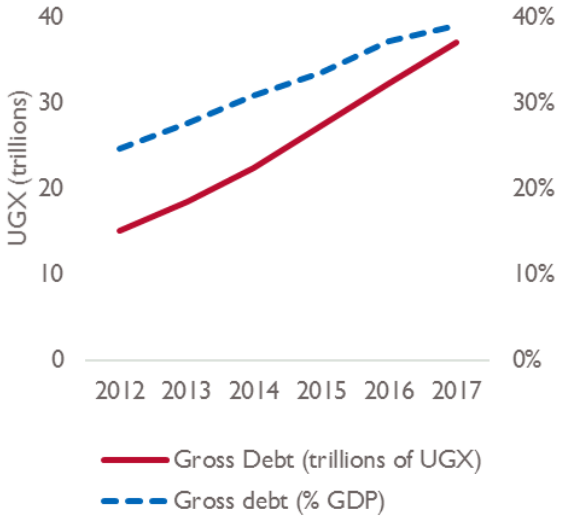
Between FY 2012/13 and FY 2016/17, GOU spending increased from about UGX 10.2 trillion to about UGX 18.0 trillion, while revenues increased from 8.3 trillion to 15.9 trillion over the same period. Overall, this represents a 77 percent increase in spending and an 80 percent increase in revenues (Figure 1). While revenue growth was slightly faster than expenditure growth over the period, the strong increase in spending has fueled an increase in debt with debt increasing from about 25 percent of GDP at the beginning of the period to about 39 percent of GDP at the end of the period (Figure 2).

Figure 1 - Macro level trends in revenue and expenditure FY 2012/13 – 2016/17



Source: IMF World Economic Outlook (WEO) (2018)

Figure 2 – Trends in government debt FY 2012/13 – 2016/17

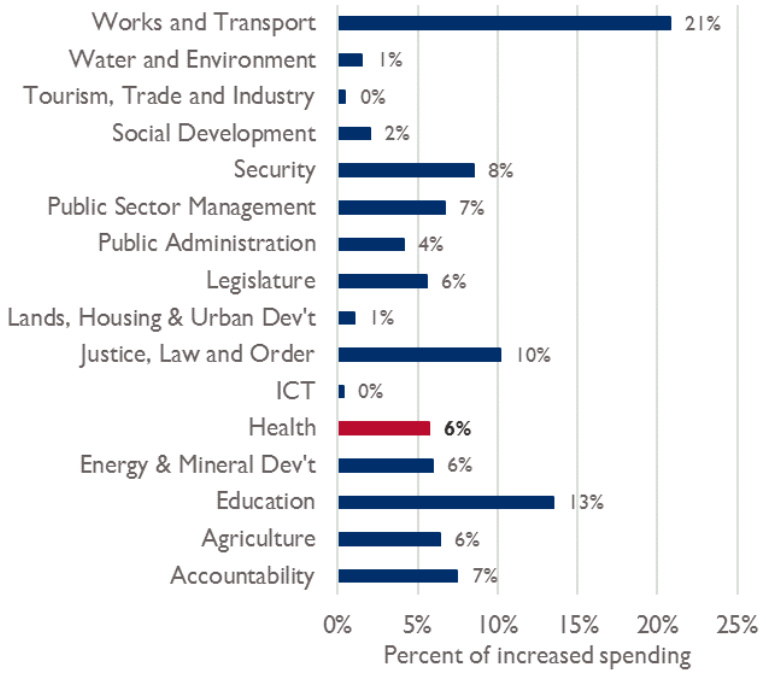


Source: IMF WEO (2018)

The GOU's increase in spending has contributed to a number of high priority sectors such as Education, Agriculture and Health, though the Health sector has benefited less than many sectors. Of the roughly UGX 7.8 trillion increase in government spending between FY2012/13 and FY2016/17, about 21 percent of this increase in spending was allocated to the Works and Transportation sector. This is followed by Education, which received 13 percent of the increase, and Justice, Law and Order, which received 10 percent. If combined, Public Sector Management and Public Administration benefited from 11 percent of the increase in spending. By contrast, the Health Sector garnered about 6 percent of increased spending (Figure 3).

[6] The second in a series of six under Uganda Vision 2040.

Figure 3 - Sector Allocation of Increased Spending 2012/13 - 2016/17 (actual)

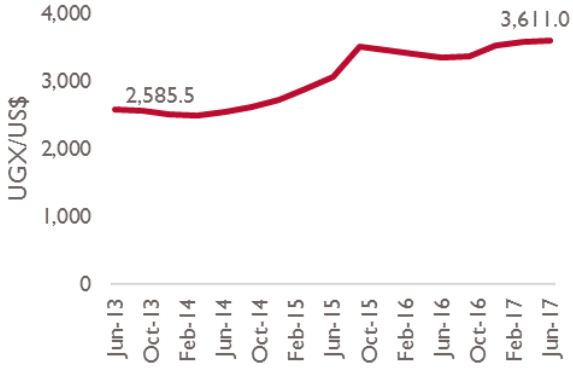


Source: MOFPED (2013, 2017)

Note: Distribution of spending by health vote and disease type are provided later in Figures 9 and 10

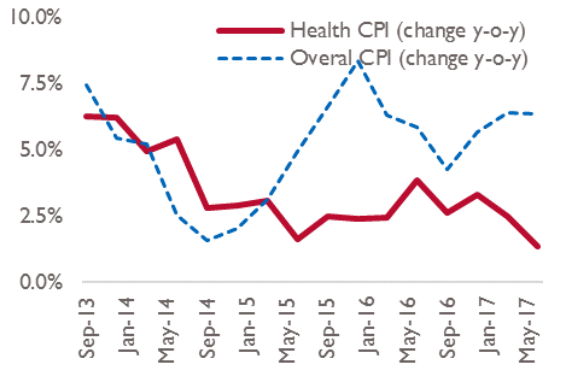
Inflation and exchange rate fluctuations both affected the cost of service delivery over the period under analysis. Between FY 2012/13 and 2016/17, Uganda experienced moderate inflation and a depreciating currency. Prices rose by about 18.1 percent overall, with the sub-index for health commodities increasing by 8.5 percent. During the first half of the period, health inflation outpaced general inflation. In the latter part of the period, general inflation was higher, buoyed in particular by rising prices for food, housing and communications (see Figure 5 and Figure 7). Over the period 2013 through 2017, the exchange rate depreciated by about 39.7 percent from 2,586 UGX/US$ to about 3,611 UGX/US$, putting upward pressure on the cost of imported goods (including medical equipment, medicines, and some construction materials for medical facilities) (See Figure 4).

Figure 4 - Exchange Rate Trends, quarterly 2013-17 (UGX/US$)



Source: Bank of Uganda (June 2018)

Figure 5 - Inflation Trends, quarterly 2013-17 (% change prices)



Source: Bank of Uganda (June 2018)

HEALTH FINANCING TRENDS

In Uganda, the government contributes much less to health sector financing than comparator countries; depending heavily on financing from households and development partners. Table 2 provides a summary of the sources of financing for total health expenditure (THE) for Uganda, Kenya and Tanzania (two neighbors in the East African Community). Sri Lanka is also shown to provide the composition of health financing for a country that has largely transitioned off development partner support for health. In Uganda, the public sector contributed about 15 percent of total health expenditure, compared to 45 percent in Kenya, 29 percent in Tanzania, and 56 percent in Sri Lanka. Private funding in Uganda, 93 percent of which comes from out of pocket household expenditures, is about 43 percent compared to an average of 38 percent across the three comparator countries. Development partner funding represents about 42 percent in Uganda, compared to 18 percent in Kenya, 48 percent in Tanzania, and less than 1 percent in Sri Lanka.

Table 2 – Sources of Health Financing, Uganda and comparator countries

Source	Uganda (FY 2015/16)	Kenya (FY 2015/16)	Tanzania (FY 2011/12)	Sri Lanka (FY2013)
	Percent Total Health Expenditure (THE)			
Public	**15%**	**45%**	**22%**	**56%**
Private	**43%**	**37%**	**29%**	**44%**
Of which out of pocket	*40%*	*26%*	25%	*40%*
other private	*3%*	*11%*	4%	*4%*
Development Partners	**42%**	**18%**	**48%**	**0.01%**

Sources: National Health Accounts, years as noted above[7]
Note: Totals may be slightly above or below 100 percent due to rounding

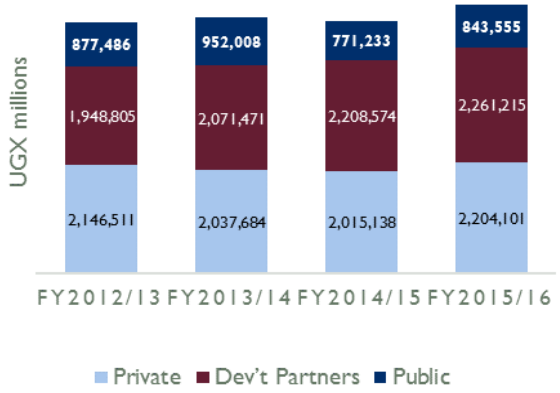
Kenya, in particular, provides an important counterpoint to Uganda with respect to the composition of health financing. In Kenya, public contributions to THE increased steadily from 2009/10 to 2015/16, during which time THE increased from KSh 163 billion (US$ 2,107 million) to KSh 346 billion (US$ 3,537 million). On a per capita basis, this represents an increase from about KSh 4,050 (US$52.36) per capita to about KSh 7,325 (US$74.87).[8] In 2009/10, the public sector funded 29 percent of THE. In 2012/13, the public sector funded 34 percent of THE. By 2015/16, this figure was about 45 percent. These increases in public funding took place in the context of devolution in Kenya, and resulted in large part from expansion of the funding of transfers to local level health service delivery. Uganda has also devolved significant service delivery to the sub-national level, but has not yet made as substantial of an expansion in transfers from the central government to the sub-national level.

Uganda government contributions to health financing have been uneven over time, and in some years increases in health spending did not keep up with population growth and rising prices. Public contributions to the health sector went from UGX 877 billion in FY2012/13 up to 952 billion in

[7] See http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/NHA/Sri%20Lanka%20National%20Health%20Accounts%202013.pdf
[8] Exchange rates for Kenya derived from IMF World Economic Outlook Database by comparing national currency values to U.S. dollar values for the Gross domestic product, current prices. 2009 value = KSh 77.3510 / US$. 2015 value = KSh 97.8302 / US$.

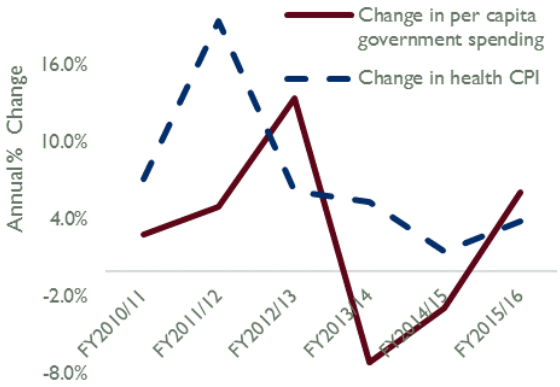
FY2013/14, only to fall to UGX 771 billion in FY 2014/15. GOU contributions recovered slightly in FY 2015/16 to UGX 843 billion and about UGX 890 in FY2016/17, but have not yet reached their high in FY 2013/14 (see Figure 6). In a number of years over the period, per capita public health spending did not keep up with increases in prices – leading to a further erosion in the funds available for public health service delivery in Uganda. This points to a need to better incorporate the projected impact of increases in prices and exchange rate risks into costing estimates in the budgeting process.

Figure 6 –Health Expenditure by Funding Source, FY 2012/13-2016/17, UGX millions



Source: NHA (2012/12 and 2015/16)

Figure 7 – Growth in Per Capita Health Spending compared to health prices, % change



Source: NHA (2012/12 and 2015/16), BOU (June 2018) (data on prices)

Over FY 2012/13 through FY 2015/16, private sources of funding and development partners both increased their health sector spending. Private sources of funding (notably households) increased spending by about 3 percent, and donors increased spending by about 16 percent. As of FY 2015/16, private funding represented 42 percent of THE, while development partners represented about 43 percent of THE. Private health spending through out of pocket (OOP) expenditures are discussed in more detail in the Equity section.

ALLOCATIVE EFFICIENCY

Investment in Uganda's health system are critical to the achievement of Uganda Vision 2040 goals and the implementation of the Health Sector Development Plan (HSDP).[9] Uganda Vision 2040 sets out a number of ambitious goals to improve health outcomes, including improving life expectancy at birth from 51.5 in 2010 to 85 by 2040 (see Table 3 for more). Some progress has been made, but achieving these improvements will require significant investments and strong coordination by all parties.

[9] Uganda Vision 2040 is available here: http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf.
The Health Sector Development Plan is available here: http://www.health.go.ug/sites/default/files/Health%20Sector%20Development%20Plan%202015-16_2019-20.pdf

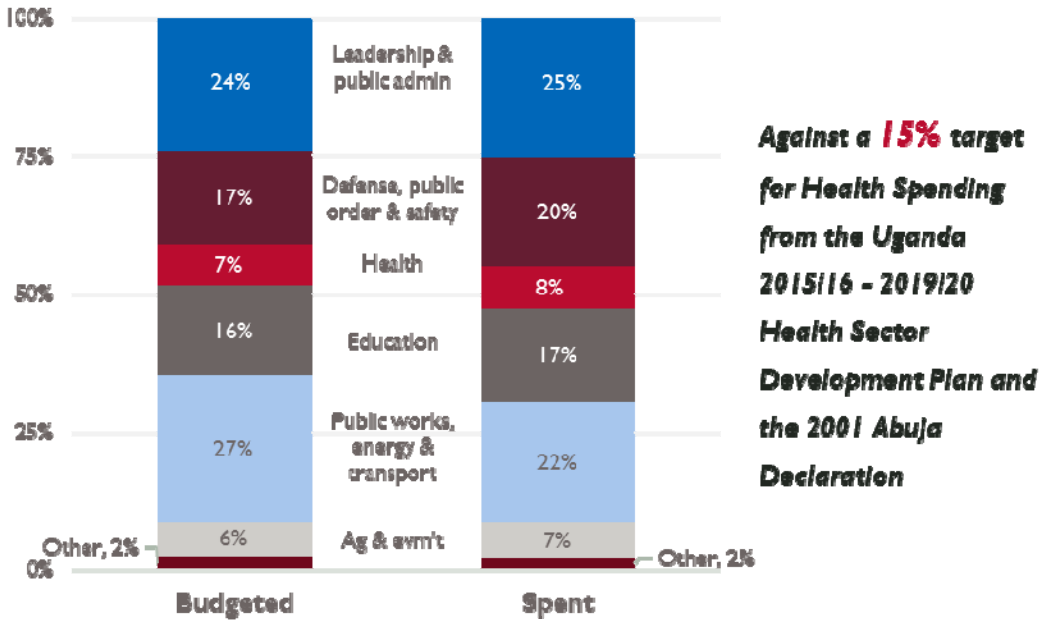
Table 3 – Uganda Vision 2040 Health Related Targets

Indicator	2010 (Baseline)	FY 2016/17	Target 2040
Life expectancy at birth (years)	51.5	60/65 (M/F)	85
Infant mortality rate per 1000 live births	63	43	4
Maternal mortality rate per 100,000 live births	438	336	15
Under 5 mortality rate per 1000	96	64	8
Child stunting as a % of under 5s	33	29	0

Source: Uganda Vision 2040; Annual Health Progress Report 2016/17; DHS 2016; World Health Organization (http://apps.who.int/gho/data/?theme=main)

Both budgeted and actual resources for the health sector fall short of the ambitious goals set out under Uganda Vision 2040 and the HSDP. The most recent Health Sector Development Plan (HSDP) (2015/16-2019/20) recognizes the gap in resources and sets a target of allocating 15 percent of the GOU budget to finance the health sector. On the basis of budgeted resources, Uganda devoted less than half this amount – about 7 percent – to the health sector on average between FY2012/13 and FY2016/17. On an actual basis, due to weak budget execution of other sectors (notable public works, energy and transportation) the health sector represented about 8 percent of GOU funds expended over the same period.

Figure 8 – Allocation of Budgeted and Spent GOU Resources (Average FY 2012/13 – 2016/17)

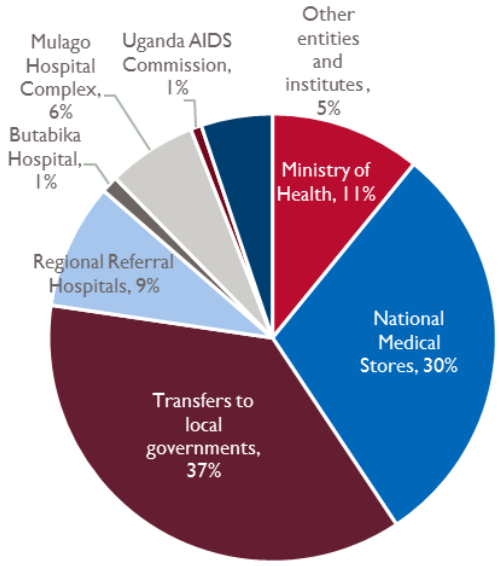


Source: MOFPED (2017)

Within the health sector, public spending predominantly funds operational and development costs for the hospital system and other health facilities (see Figure 9). More than a third of spending is transferred directly to districts or municipal councils, which they use to fund operational and development expenditures for health sector entities. About 30 percent is spent through the National Medical Stores for the purchase of medicines used in health facilities nationwide. About 16 percent is

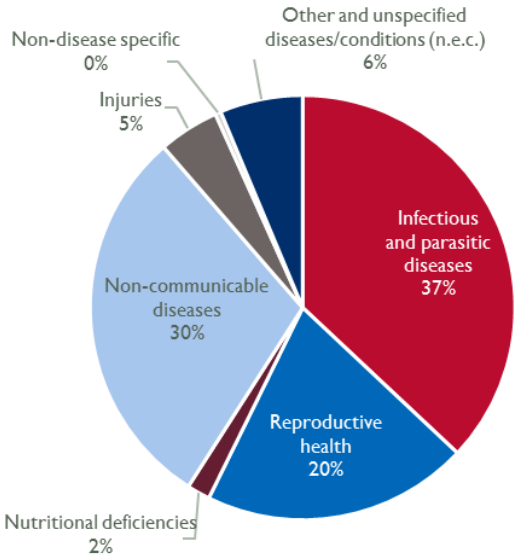
spent in the country's national and regional referral hospitals, and about 11 percent is spent to support the Ministry of Health (including the capital expenditures it manages for the benefit of hospitals and other health facilities). The remaining 6 percent funds various research institutes and specialized bodies including the Uganda AIDS Commission (Figure 9).

Figure 9 - Spending by Health Vote, Payment Stage, FY 2016/17



Source: MOFPED (2018)

Figure 10 - Spending by Disease Type (FY 2015/16)



Source: Uganda National Health Accounts (NHA) (2015/16)

When reviewing the distribution of resources by disease type, infectious and parasitic diseases received about 37 percent of spending in FY2015/16, while NCDs received 30 percent and reproductive health received about 20 percent of government funds. As measured by "years of life lost" to various disease types, infectious and parasitic disease represent about 54 percent of the disease burden, while NCDs and reproductive health represent about 17 and 19 percent respectively, according to the 2016 Global Burden of Disease Study. Ten of the top 25 causes of years of life lost in this study are infectious and parasitic diseases, including six of the top ten (see Table 4). While it appears that public funds may be overly focused on NCDs, this is due in large part to heavy emphasis of development partners on a number of costly and high burden infectious diseases, notably HIV/AIDS, Malaria and Tuberculosis. This appears to be causing crowding out of government funds in this area to the benefit of other disease types. Over time, as donors phase out, the health sector will need to be careful to supplement public funds as donor funds phase out to avoid losing important gains made in reducing the toll of these diseases (see Table 4 for changes in years lost from 2010 to 2016).

Table 4 - Top 25 causes of years of life lost in Uganda in 2016, and variations from 2010

Rank	Disorder	Thousands years lost	Percent Total	Change from 2010
1	HIV/AIDS	1,846	11.4%	-47%
2	Malaria	1,797	11.1%	-52%
3	Lower respiratory infections	1,332	8.2%	-9%
4	Neonatal encephalopathy	1,042	6.4%	-8%
5	Tuberculosis	990	6.1%	5%
6	Diarrheal diseases	945	5.8%	9%
7	Preterm birth complications	845	5.2%	-10%
8	Meningitis	622	3.8%	9%
9	Unintentional injuries	588	3.6%	13%
10	Protein-energy malnutrition	526	3.2%	1%
11	Neonatal sepsis	498	3.1%	-2%
12	Sexually transmitted diseases excluding HIV	471	2.9%	170%
13	Other neonatal disorders	389	2.4%	-5%
14	Transport injuries	320	2.0%	15%
15	Self-harm and interpersonal violence	289	1.8%	19%
16	Stroke	237	1.5%	8%
17	Ischemic heart disease	232	1.4%	10%
18	Congenital birth defects	210	1.3%	2%
19	Whooping cough	148	0.9%	9%
20	Other neglected tropical diseases	131	0.8%	14%
21	Other unspecified infectious diseases	118	0.7%	19%
22	Other cardiovascular and circulatory diseases	118	0.7%	15%
23	Diabetes mellitus	116	0.7%	18%
24	Paralytic ileus and intestinal obstruction	105	0.6%	23%
25	Hemoglobinopathies and hemolytic anemias	96	0.6%	7%
	Subtotal Infectious Diseases	8,747	53.9%	
	Subtotal NCDs	2,698	16.6%	
	Subtotal Reproductive Health	3,048	18.8%	
	Subtotal Injuries	1,198	7.4%	
	Subtotal Nutrition	548.89	3.4%	

Source: Global Burden of Disease Collaborative Network (2016)[10]

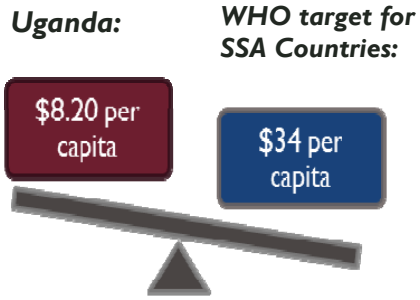
Note: NCDs are highlighted in pink; communicable diseases are in blue; grey are related to reproductive health others in white

[10]Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017. Available from http://ghdx.healthdata.org/gbd-results-tool.

ADEQUACY OF HEALTH FINANCING

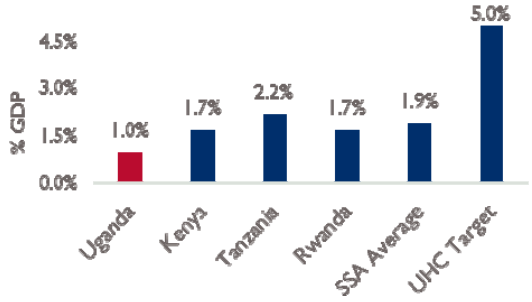
Public spending on the health sector remains low, and Uganda remains highly dependent on donor funding to meet its health sector challenges. According to the 2015/16 NHA, Uganda spends about UGX 23,000 ($8.20) per capita compared to the WHO target for government spending per capita of about $34 per capita (see Figure 11).[11] This figure has fluctuated over time, increasing from about UGX 15,405 ($7.59) in FY2009/10 to a high of UGX 27,312 ($10.76) in 2013/14, then falling to UGX 21,730 ($7.70) the following fiscal year (see Annex 1 for more details).[12] Spending is also low as a proportion of GDP. While all of the countries highlighted in Figure 12 fall short of the 5 percent target estimated to be required to achieve UHC, Uganda's government health funding is particularly low, representing about 1 percent of GDP against an average of 1.9 percent for Sub-Saharan African countries, and 1.7 percent to 2.2 percent for its neighboring countries in East Africa.

Figure 11 – Government Spending Per



Source: Uganda NHA (2015/16)

Figure 12 - Government Health Funding in Uganda against Regional Comparators



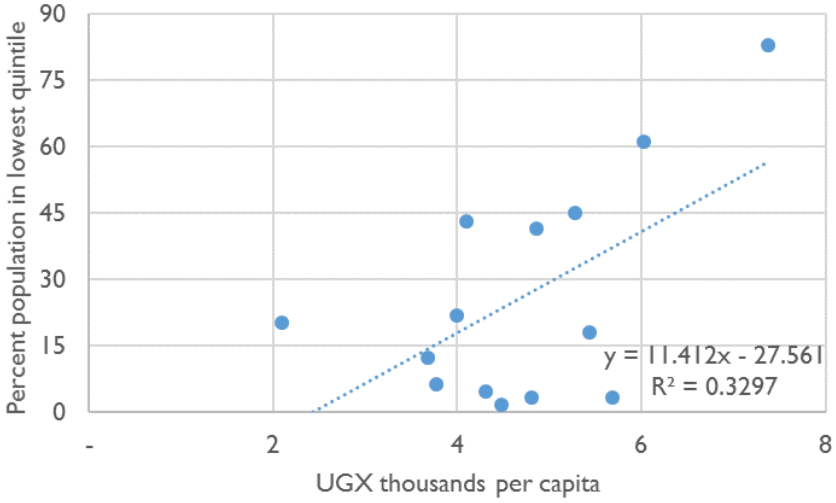
Source: World Development Indicators (May 2018)

EQUITY AND HEALTH FINANCING

Much of health spending that directly affects households is implemented at the sub-national level. In general, GOU tends to re-distribute its health resources to Local Governments (LGs) in a fairly pro-poor manner. Figure 13 presents the correlation between per capita spending by LGs for a sub-region, against the percentage of the population in that sub-region that is in the lowest wealth quintile, as reported in the 2015/16 Demographic and Health Survey (DHS). There is a clear positive relationship between higher poverty and higher GOU per capita spending on health services. There are, however, several more well off sub-regions that have relatively high GOU spending per capita, potentially due to extraneous factors such as geography.

[11] Includes total Government of Uganda expenditure on health sector spending per the NHA methodology, inclusive of recurrent (wage and non-wage) and capital costs, and excluding spending by donor and households.
[12] Exchange rates used for conversions were the official mid-rate average for the corresponding financial year as reported by the Bank of Uganda (release date June 5, 2018)

Figure 13 – Linkage between population in lowest quintile and local per capita GOU health expenditures



Source: *Local Government Quarter 4 Quarterly Performance Reports, FY 2015/16; DHS 2015/16*

Counteracting a largely pro-poor distribution of government resources, Out-of-Pocket (OOP) expenditures have expanded significantly over the past several years, putting increased pressures on households and creating the possibility for disparity in access to quality health services.

Table 5 – Increase in Out-of-Pocket Health Expenditures

Fin. Year	Population Estimate	Out of Pocket Expenditure (Billion)	Per Capita OOP Expenditure (UGX)
2008/09	29,592,600	1,214	41,026
2009/10	30,661,300	1,372	44,741
2010/11	31,755,550	1,534	48,291
2011/12	32,939,800	1,776	53,904
2012/13	34,131,400	2,060	60,344
2013/14	34,856,813	1,937	55,556
2014/15	35,492,100	1,926	54,265
2015/16	36,560,700	2,108	57,645

Source: Uganda NHA 2011/12. 2013/14. 2015/16

Geographically, there also appears to be some discrepancy in access to health facilities, though the difference is relatively small. Higher poverty sub-regions (with population weighted average poverty rates of about 37 percent) had about 14.2 percent of their population more than 5 km away from a health facility, while poorer sub-regions (with population weighted average poverty of about 13.3 percent) had about 13.3 percent of their populations more than 5 km away from a health facility. Overall, this difference is fairly moderate – demonstrating progress on improving access to health facilities across the country. There are, however, notable outliers with Acholi sub-region having very poor access to health facilities, and Kampala having excellent access.

Lower levels of access to health facilities by poorer communities contributes to higher patient caseload per health worker. A health worker in a community in the poorest quintile provides average of six outpatient consultations daily, compared to three for staff in facilities in the richest quintile of communities. People accessing health facilities in poorer areas are more likely to face

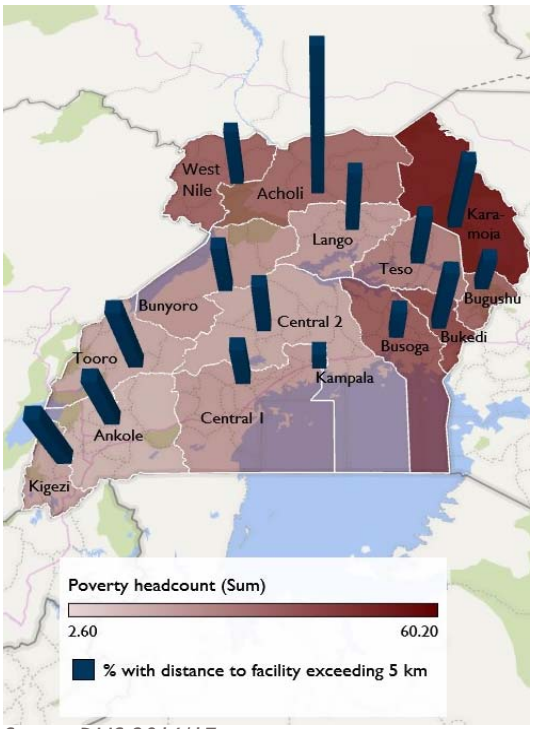
overcrowding and long queues, and health workers may have less time to address their needs – thus affecting quality of service.[13]

Table 6 - Distance from Health Facility and Poverty of Sub-Region

Sub-region	Poverty headcount (%)	Population >5 km from health facility (%)
Higher Poverty Sub-Regions		
Karamoja	60.2	17.2
Bukedi	43.7	16.4
Busoga	37.5	8.0
West Nile	34.9	13.3
Bugishu	34.5	8.6
Acholi	33.4	34.1
Teso	25.1	13.0
Weighted Average	***36.9***	***14.2***
Lower Poverty Sub-Regions		
Bunyoro	17.3	12.3
Central 1	15.6	11.4
Lango	15.6	15.1
Kigezi	12.2	16.9
Tooro	11.1	17.3
Central 2	11	13.4
Ankole	6.8	15.2
Kampala	2.6	4.9
Weighted Average	***11.4***	***13.3***

Source: DHS 2016/17

Figure 14 – Map of Poverty and Access to Health Facilities



Source: DHS 2016/17

[13] http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf

SECTOR FINANCIAL MANAGEMENT GOVERNANCE

The last decade has seen significant changes in the Ugandan PFM landscape both for the health sector and for the country as a whole. In FY2008/09 the government shifted from line-item (or input-based) budgeting to Output Oriented Budgeting (OOB). The GOU rolled out the Integrated Financial Management System (IFMS) to all central government entities (LG rollout is ongoing), decentralized payroll and implemented an integrated payroll and personnel system, launched straight through processing of payments using electronic funds transfers, and adopted a Treasury Single Account (TSA). The Public Finance Management Act of 2015 and its accompanying regulations introduced numerous changes in public financial management processes and procedures, including the introduction of a new budget calendar. More recently, GOU rolled out Programme Based Budgeting (PBB) across central government for FY2017/18 and at the sub-national level for FY2018/19.

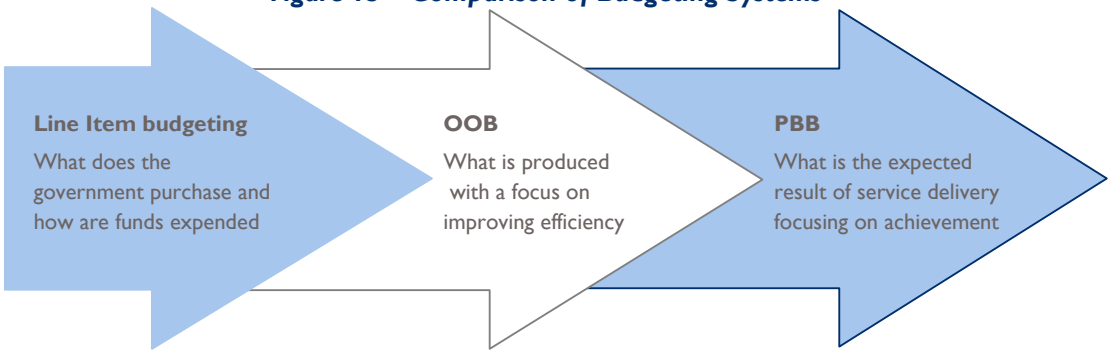
While these reforms promise to improve the PFM system, the quick pace of change in the country has left some entities struggling to keep up, and many officials seem to suffer from reform fatigue -- straining the human and technical resources necessary for implementation. This section will examine each of these facets of financial management and governance, beginning with an examination of the GOU's transition to PBB, and moving to a review of issues related to budget execution and monitoring.

BUDGET PLANNING

MINISTRY OF HEALTH

The Ministry of Health (MOH), along with other central government entities, began the transition from OOB to PBB during the FY2017/18 budget preparation process. Just as the shift to OOB involved a change in focus from inputs to outputs, the transition to PBB means budgeting focused on outcomes and results. Properly implemented, PBB helps governments to better establish the linkages between inputs, outputs, and outcomes, thus improving their ability to plan and execute budgets that best contribute to their highest priorities.

Figure 15 – Comparison of Budgeting Systems



Adapted from: Government of Uganda Programme Based Budgeting Manual (Draft July 2018)

The transition to PBB in Uganda has been quite rapid. GOU rolled out PBB to all of central government in preparation of the FY2017/18 budget and across all sub-national entities for the FY2018/19 budget. This put enormous pressure on MOFPED's limited human resources to provide adequate training, guidance, and technical support to any given sector or vote. This was further complicated by the simultaneous introduction of a new electronic budgeting application (Programme Budgeting System, or PBS), the bugs and breakdowns of which MOFPED also had to respond to during this critical time.

MOH has already made significant progress on implementation PBB, and has been a leader within GOU pushing the transition from OBB to PBB. In practical terms, MOH has outlined its program structures, defined new outputs, outcomes and associated performance indicators, and aligned everything with strategic sectoral development goals. MOH and the other health sector votes successfully carried out these tasks, and prepared Budget Framework Papers (BFPs), work plans and estimates, and Ministerial Policy Statements (MPS) for the FY2017/18 and FY2018/19. In fact, owing in part to technical assistance from USAID, MOH and the health sector actually experienced a smoother transition to PBB than other sectors. The health sector was the first full sector to complete its BFP for FY2017/18. MOH has also been a critical partner for MOFPED to identify technical issues with the new electronic PBS application, and to support sub-national capacity building efforts on PBB with particular focus on South Western Uganda.

PBB is a complex budgeting system, however, and MOH will need to continue its work to fully implement and institutionalize PBB. Due to the rapid pace of implementation of the reform, MOH (like most line ministries) translated the existing vote functions from OBB into the new programs without major adaptation (see Box 1 for a list of MOH's programmes and sub-programmes).[14] Over time, MOH may consider re-aligning its program structure to better capture its service delivery priorities as defined in its sector strategies and the NDP II. Moreover, MOH may consider enhancing the quality of the performance indicators included in its programme budget. For example, in the FY2017/18 and 2018/19 budgets, the MOH vote included the purchasing of vehicles, equipment, and software as "outputs", even though these would more properly be viewed as inputs. When it comes to costing of outputs and outcomes, GOU still uses simple projections that is previous year's estimate as a basis and project next year's spending based on projected inflation. MOH may consider adopting output-unit or activity-based costing as the implementation of PBB proceeds. Finally, knowledge of PBB is mostly concentrated with the Planning Department and members of the sector budget technical working group. As more MOH staff are aware of the shift to PBB and understand how it is different, in practical terms, from previous budgeting systems, PBB will become a more useful tool for management and operations at the project and activity levels.

[14] For more see CSBAG eval of PBB

Box 1 – Ministry of Health Programme Structure in 2018/19 Budget

Programme: 01 Health Monitoring and Quality Assurance
- Quality Assurance and Inspection

Programme: 02 Health Infrastructure and Equipment
- District Infrastructure Support
- Institutional Support to MOH
- Health Systems Strengthening
- Italian Support to HSSP and PRDP
- Support to Mulago Hospital Rehabilitation
- Rehabilitation and Construction of General Hospitals
- Construction of Specialised Neonatal and Maternal Unit in Mulago Hospital
- Renovation and Equiping of Kayunga and Yumbe General Hospitals
- Construction and Equipping of the International Specialized Hospital of Uganda
- Regional Hospital for Pediatric Surgery
- Uganda Reproductive Maternal and Child Health Services Improvement Project

Programme: 03 Health Research
- Research Institutions
- JCRC

Programme: 04 Clinical and Public Health
- Community Health
- Clinical Services
- National Disease Control
- Shared National Services
- Nursing Services
- East Africa Public Health Laboratory Network Project Phase II
- Uganda Sanitation Fund Project II

Programme: 05 Pharmaceutical and other Supplies
- Global Fund for AIDS, TB and Malaria
- Gavi Vaccines and HSSP
- GAVI Vaccines and Health Sector Development Plan Support
- Pharmacy

Programme: 06 Public Health Services
- Community Health
- National Disease Control
- Health Promotion, Communication and Environment Health
- Maternal and Child Health
- East Africa Public Health Laboratory Network project Phase II
- Uganda Sanitation Fund Project II

Programme: 08 Clinical Health Services
- Shared National Services (interns' allowances, transfers to districts and international organisations)
- Nursing Services
- Integrated Curative Services
- Ambulance Services
- Health Infrastructure

Programme: 49 Policy, Planning and Support Services
- Headquarters
- Planning
- Internal Audit Department
- Human Resource Management Department
- Institutional Capacity Building in the Health Sector-Phase II

Source: GOU (2018). Health Sector Budget Framework Paper 2018/19.

Outside of the transition to PBB, there have also been issues with respect to budgeting for development funds. MOH does not maintain a comprehensive database of the status and funding of health sector investments. Development and maintenance of this database is complicated in part by the prevalence of development projects supported by off-budget/off treasury support from development partners. This has led to a number of issues. MOH does not fully plan for multi-year capital expenditures involving donor funds, sometimes resulting in donors withholding funds and delays in the progress on the activities.

SUB – NATIONAL LEVEL

LGs rolled out PBB one year later than central government votes. Accordingly, the FY2018/19 budgets were the first LG budgets prepared in PBB format. Following numerous delays, all LGs were able to finalize and submit FY2018/19 BFPs and policy statements, all of which were accepted by MOFPED prior to the start of the FY.

LGs face serious challenges transitioning to and fully institutionalizing PBB. Chief among these are serious shortcomings in human and technological capacity. Due to their remote locations, many districts have difficulties attracting qualified personnel to fill important planning and finance positions. The frequent creation of new districts leads to greater human resource deficiencies, as a limited pool of experienced staff is divided among an increasing number of districts. LGs already struggled to meet existing budgeting and reporting requirements dictated in the PFM Act and Local Government Act, so the addition of a new and complex budgeting system mechanism has compounded those issues. In addition, LGs interviewed claimed to have received very little in the way of limited training and technical guidance from MOFPED, and so have a limited understanding of how PBB works and how their budgets should be restructured. Districts receiving USAID/LPFM II support have fared somewhat better than their peers, but still lack the resources to fully implement PBB.

Box 2 – Impact of Decentralization on Local Service Delivery

From 2006 to 2016, the number of districts in Uganda increased from 80 to 115, an increase of almost 44 percent over the decade.[15] This increased further in 2017 and 2018, bringing the new total to 127 districts. This rapid proliferation has put significant pressure on LGs. New districts require new staff, and often they are created in regions where trained and qualified staff are already in short supply. Existing districts which are subdivided see their funding from the central government decrease and their staff transfer to help set up the new districts.

There has also been a trend toward increasing the numbers of town and municipal councils. While urban areas face different challenges than more rural areas (e.g., waste disposal, population density), these further subdivisions can lead to redundancies. Towns and municipalities are also the most common site for markets, which serve as an important source of local revenue that districts no longer have access to once new town and municipal councils are created within them.

On the technological side, LGs struggle to utilize the new PBS. Training from MOFPED has been limited, and often the officials who receive training on PBB and PBS are senior-level staff who delegate responsibility for actually using the application to their subordinates. Additionally, LGs are

[15] Source: Ministry of Local Government Fact Sheet (http://www.molg.go.ug/sites/default/files/MoLG%20-%20%20Fact%20Sheet.pdf)

poorly resourced, with limited numbers of computers able to operate the system. Finally, because PBS is a web-based application, rural districts struggle to use it amidst unreliable internet connectivity and limited ICT skills. In some cases, officials have reported traveling to neighboring districts with better connectivity in order to make their required budget and reporting submissions. MOFPED is exploring developing an offline module for PBS – which would allow users to prepare budget and reporting submissions offline and then simply submit when connectivity was reestablished.

Apart from the mechanics of budgeting under PBB, regional referral hospitals and LGs also face challenges with budget planning more generally. Some of these challenges involve properly aligning GOU funding with co-financing by donors. As previously established, donors fund much of the health sector's recurrent budget, including the salaries of many health workers and significant amounts of medicines and health supplies. As donor projects and assistance programs wrap up, the health sector often finds itself unable to absorb these staff on to the GOU payroll, and hospitals do not always have the detailed personnel costs needed to plan for on-boarding of these staff and to advocate for appropriate resources.

The limited amounts of funding provided under Primary Health Care (PHC) grants creates major service delivery challenges. The amounts budgeted have not kept up with increase in prices and population growth. PHC amounts also do not take into account increased recurrent costs stemming from capital investments. For example, one hospital interviewed during the preparation of the PER noted that despite a significant expansion of the size of the facility, which involved the construction of two additional specialized wings, the hospital's grant for recurrent costs was not increased until 2016/17. As a result, the hospital now routinely runs arrears for electricity and water provision, and struggles to make payments to vendors that provide for the cleaning of the newly expanded facility.

LGs also face challenges related to how funds are allocated by the central government. PHC grant allocation formulas (see Table 7) vary somewhat by expenditure type, but are heavily weighted toward population. While this is an essential measure, excessive focus on it neglects other important factors. Districts like Buvuma and Kalangala, for instance, must provide services to populations spread across dozens of islands in Lake Victoria. Some districts in Eastern Uganda like Amudat and Nakapiripirit are home to large numbers of pastoral herders who are highly mobile and difficult to reach. In each of these cases, the districts face significantly greater costs associated with transportation and outreach efforts in order to provide services to their populations; but because such geographical issues constitute just 2 percent of non-wage funding calculations, those districts would receive virtually the same level of funding as districts with similar population levels that do not face such implementation challenges. Covering high transportation costs appears to be a particular issue. In a sampling[16] of district performance contracts for FY2016/17, more than half (52%) identified transportation issues as among their greatest challenges for improving health service delivery. If such insufficiencies are the norm in the majority of districts, then it means the situation in geographically-challenging districts the issue must be more severe.

[16] Sample consists of 77 districts for which FY2016/17 performance contracts were available at http://www.budget.go.ug/budget/individual-lg-budgets-and-performance-reports

Table 7 – Primary Health Care Grants Guidelines FY2016/17

Variable	Weighting				Justification
	Wage	NWR	Hospital NWR	Dev't	
Population	84	60	0	25	Population represents the overall target beneficiaries, and is an indicator of demand for health services and the scale of services required
Population of HLGs with Public of PNFP Hospitals	0	0	82	0	Population of districts with hospitals represents a proxy for demand for hospital services and the scale of services required
Infant Mortality	10	8	10	10	Equalizing health outcomes: most of the causes of infant mortality are preventable using already proven interventions. These include immunization, ORS, nutrition and hygiene. Therefore, strengthening the health system will address the causes that enhance disparities in IMR.
Poverty Headcount	4	2	2	10	Approximates socio-economic goal of increasing access for poorer communities
Fixed Allocation	0	4	6	0	A fixed allocation to cover the running of the health department/hospital
Number of HSDs	0	24	0	0	A constant amount to cover the fixed cost of running a health sub district
Population in Hard to Reach Hard to Stay Areas	2	2	0	5	Mountainous, islands, rivers etc. have peculiar terrain. Provides greater allocations to areas where costs are likely to be high.
Population per HCIII, HC IV or Hospital	0	0	0	50	This is an indicator of the degree to which LGs are lagging behind in terms of access to a major health facility.

Source: Republic of Uganda Ministry of Health Primary Health Care Grants Guidelines[17]

[17] Source: http://health.go.ug/content/primary-health-care-grants-guidelines

BUDGET IMPLEMENTATION

While budget execution rates for the Ugandan health sector overall are quite high, this masks significant budget implementation challenges for several health votes and for the absorption of donor funds. Annual health sector budget expenditure rates for GOU funds are generally high, ranging between 94 and 100 percent for the years from FY2012/13 – 2016/17 (see Figure 16). Budget execution rates vary significantly between health sector votes. MoH has the lowest average budget execution rate at 85 percent, followed by the regional referral hospitals, which implemented on average 87 percent of their budget. On the other side, the National Medical Stores routinely implements 100 percent of its budget, and many of the specialized health institutes, such as the Uganda Cancer Institute, also have quite strong budget implementation rates.

Table 8 – Average Budget Execution Rates for Health Votes (FY 2013/14 - 2016/17) (% of revised budget spent)

Vote	Average Budget Execution Rate FY 2013/14 - 2016/17
Ministry of Health	85%
Uganda AIDS Commission	94%
Uganda Cancer Institute	95%
Uganda Heart Institute	92%
National Medical Stores	100%
Kampala Capital City Authority	98%
Health Service Commission	91%
Uganda Blood Transfusion Service (UBTS)	97%
Mulago Hospital Complex	95%
Butabika Hospital	91%
Regional Referral Hospitals	87%
Uganda Virus Research Institute (UVRI)	91%

Source: MOFPED IFMS (2018)

The average health sector budget execution rates also obscure significant shortfalls in absorption of donor funds, which has resulted in total budget execution rates exceeding 100 percent in some years, while hovering close to 80 percent in others (see Figure 17). While some of these failures are linked to the planning challenges identified above, there are also significant impediments to budget execution relating to procurement, human resources, and other causes at the local level.

Figure 16 – Health Sector Budget Expenditure (GOU funds only) (in billions UGX)

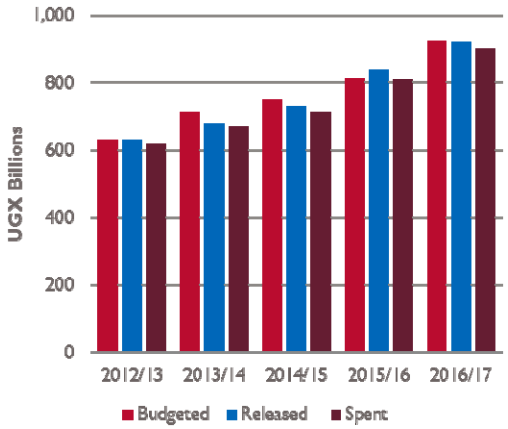
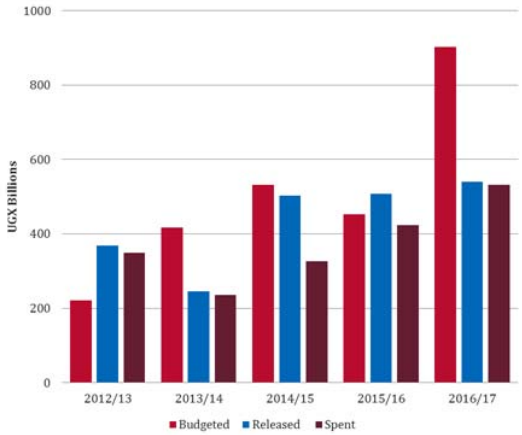


Figure 17 – Health Sector Budget Expenditure (Donor funds only) (in billions UGX)



Source: MOFPED Annual Budget Performance Reports (FY2012/13 – FY2016/17)[18]

MINISTRY OF HEALTH

As noted above, the MOH has faced challenges fully executing its budget, both with respect to GOU and donor funds (see Figures 18 and 19). FY2016/17 was a particularly low-performing year, with only 71 percent of the GOU-funded budget absorbed, and an overall budget absorption rate of 63 percent. And though MOH spent nearly 100 percent of released funds that year, roughly 45 percent of that expenditure came during the final quarter of the FY, indicating significant issues with the timeliness of payments.

Figure 18 – MOH Budget Expenditure (GOU funds only) (in billions UGX)

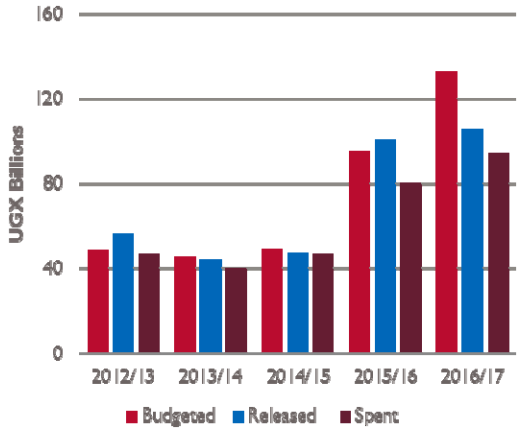
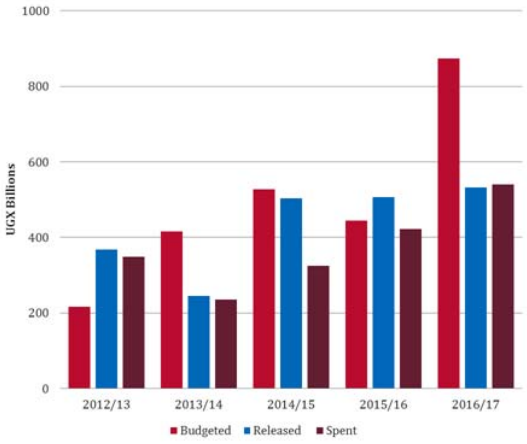


Figure 19 – MOH Budget Expenditure (Donor funds only) (in billions UGX)



Source: MOFPED Annual Budget Performance Reports (FY2012/13 – FY2016/17)

[18] Note that numbers captured in Figure 16 originate from IFMS data which does not capture District NGO Hospitals/PHC, District PHC, or District Hospitals; in contrast the NHA does and as a result NHA figures will differ slightly from those in the NHA

There are impediments to efficient expenditure throughout the expenditure chain. Quarterly releases from MOFPED are not always timely, which delays MOH's ability to initiate payments. Once releases are made from the central level, there is an information gap between the time when the releases are made and the time when the Program Managers become aware of this fact. Communication of this critical information is slow because not all Program Managers regularly participate in Finance Committee meetings where this information is shared. In addition, not all Program Managers have access to the IFMS currently, and most do not have sufficient training to effectively use the system. This creates delays between the release of funds and initiation of spending requests from managers. MOH has put in place manual vote books to be used by sub-program managers but unfortunately they are frequently out of date and do not reflect what is actually on the IFMS.

MOH also faces significant challenges executing procurements in a timely manner. The quality of procurement planning and tracking is inconsistent across departments and projects, and personnel are often unsure of the proper rules and procedures around procurements. Some staff do not have sufficient training or technical knowledge to prepare proper Statements of Work (SOWs) or Requests for Proposals (RFPs), or to adequately evaluate the bids received. This can lead to improper bids and failed procurements, which ultimately need to be retendered, greatly delaying the final expenditure (sometimes past the end of the financial year). Many department or project heads falsely believe that a procurement cannot be initiated before all funds for it are received, even though this is allowed by the law. Furthermore, many staff do not adjust the default timing for the receipt of funds to account to actual planned expenditures. As a result, they receive their cash releases in equal traches across quarters rather than maintaining cash flow plans appropriate to their needs. As cash availability is not properly aligned with needs, staff delay procuring items, which results in less timely expenditure and some unspent balances.

There are efficiency also losses at the level of payments processing. Excessive internal controls, including the requirements for pre-audit of nearly all payments, also slows down expenditure. MOH may consider establishing minimum thresholds for pre-audit, or other risk based metrics to trigger a pre-audit to improve efficiency.

The Human Resource (HR) function is a common problem-area for MOH budget execution. In FY2016/17, for instance, MOH only absorbed 55 percent of its planned HR budget. Much of this underspending on salaries and gratuity stems from poor execution of recruitment plans. The process for hiring new personnel is long and involved, and HR sometimes delays initiating searches for replacement personnel, even when impending vacancies are known in advance (e.g., retiring personnel). Slow processes aside, MOH struggles to attract qualified staff because salaries are low, and trained medical personnel can make more money working in private clinics. The low salaries for government funded medical staff are even more problematic with respect to medical staff hired by donor funded projects. As these personnel transition off donor projects, they are often not willing to accept employment for government salaries. This contributes to vacancies and unspent balances.

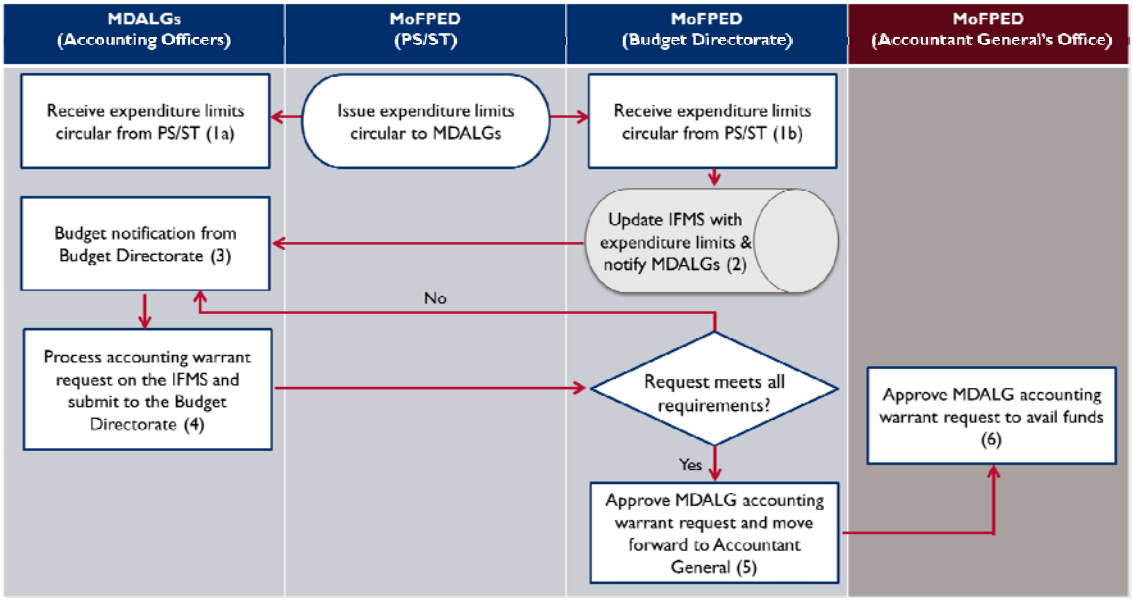
Staff capacity also presents challenges to efficient expenditure. Vacant positions and staff absences (including for approved travel) result in delayed approvals for expenditures. Frequent turnover and lack of continuity among staff affects understanding of processes for approvals and other internal controls. As noted above, Program Managers have received limited training on use of systems like the IFMS, which limits their ability to monitor funds.

SUB – NATIONAL LEVEL

Based on FY2015/16 figures, sub-national government health programs receive about 97 percent of their recurrent funding from transfers from the central government and 3 percent from local sources. For capital spending, sub-national governments receive about 82 percent of funding from development partners, 17 percent from central government, and 1 percent from local sources. [19]

Transfers from the center, therefore, represent an important source of financing for both recurrent and development spending. The processes for receipt of funds differ slightly between those entities with their own -vote – such as districts, municipal councils, or Regional Referral Hospitals – and those whose allocations are transferred via another entity – such as General Hospitals or Health Centers (see Figure 20 for overview).

Figure 20 – Release of funds to MDALGs



Source: "Key Budget Execution Processes and Controls in Ministries, Agencies and Local Governments (MALGs)" – MOFPED, 2017

Following approval from the MOFPED Budget Directorate and Accountant General's Office, the requested funds are transferred from the Uganda Consolidated Fund (UCF) to the appropriate account on a quarterly basis. Once the funds are transferred, MDALGs can access them through their respective accounts or sub-accounts on a daily basis. The flow of funds from the Uganda Consolidated Fund (UCF) to the District or Local Government (DLG) or Regional Referral Hospital (RRH) depends on the institutional structure of the entity. RRHs are all linked to the IFMS, and receive their funds directly to their sub-TSA accounts at the Bank of Uganda (BoU). The flow of funds for DLGs varies across the following three categories:

- ***IFMS Tier I DLGs***: use the Oracle based IFMS to process payments and other financial transactions. Their funds are held at sub-accounts within the TSA at BoU.

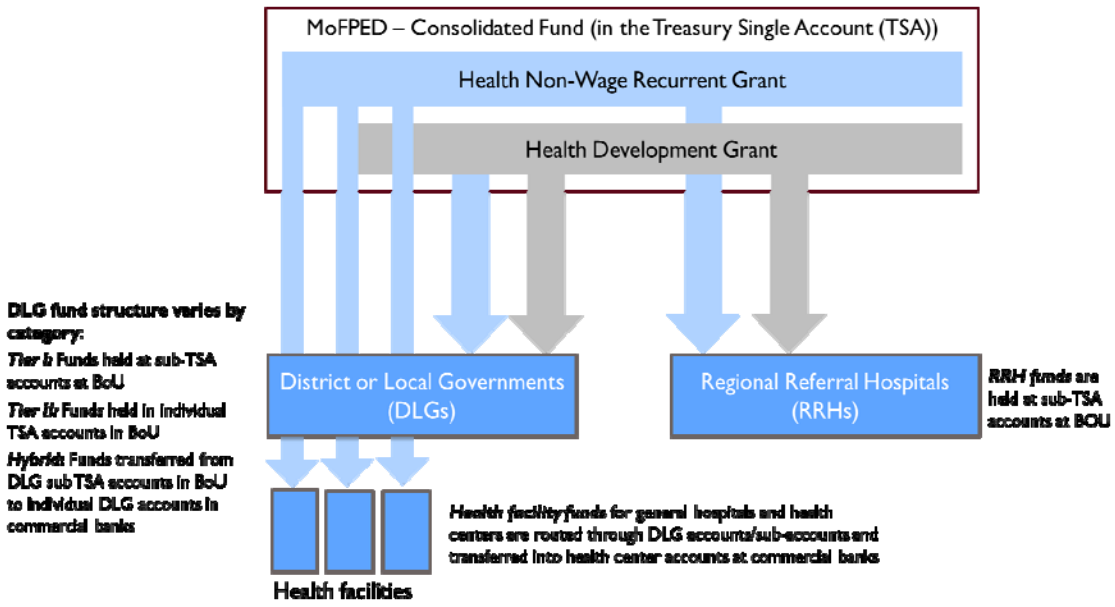
[19] Based on data from Local Government Quarter 4 Quarterly Performance Reports for FY 2015/16 for the 108 districts for which reports were available.

- ***IFMS Tier II DLGs***: use the Microsoft Navision System to process payments and other financial transactions. Their funds are held in individual TSA accounts at BoU.

- ***Hybrid DLGs (Semi Automated)***: use the Oracle based IFMS to process Salary, Pension and Gratuity payments only; other non-recurrent and development expenditures are processed and paid using manual systems (i.e., issuance of manual cheques). Their funds are initially held at sub-accounts within the TSA at BoU, but are transferred to individual accounts in commercial banks.

Figure 21 provides a summary of the flow of funds for each type of institutions.

Figure 21 – Flow of Funds for Health Sector Grants to Regional Referral Hospitals, Sub-national Government, and Health Centers



Adapted from: "Uganda Intergovernmental Fiscal Transfers Program: Technical Assessment," World Bank (2017)

Health centers or General Hospitals lack their own TSA sub-accounts, and so do not interface with MOFPED directly. Instead, the funds for these facilities are included in the warrants submitted by their respective LGs. Funds initiating in the UCF are first transferred to an LG Holding Account, after which DLGs submit warrants to MOFPED and have approved funds disbursed into the LG TSA (again, on a quarterly basis). District Accounting Officers can then access those funds directly through their LG TSA sub-accounts, and process funds from there to the individual health facilities.

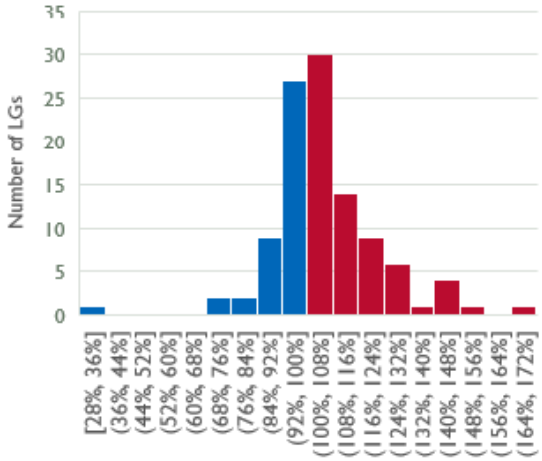
Budget execution performance using GOU and local funds varies significantly across LGs. Figure 22-A and 22-B provides a histogram, showing the number of LGs with budget execution rates within specified ranges, drawing on information reported in end of year budget performance reports for FY2015/16. Budget execution by LG ranged from 28 percent to 172 percent for recurrent spending and from 0 percent to 290 percent for development spending (GOU and local revenues only).[20] In general, however, budget implementation by LGs is fairly strong. About 87 percent of LGs in the

[20] Among the 108 districts for which information was available

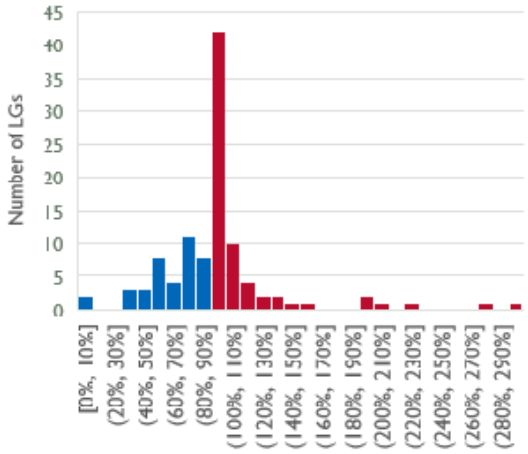
sample had budget execution rates exceeding 90 percent for recurrent spending, and 64 percent of LGs had budget execution rates exceeding 90 percent for development spending. LGs receive most of their GOU health funding through PHC grants. The central government generally releases nearly 100 percent of PHC grants, and though LGs have previously reported issues with the timeliness of releases from MOFPED, more recent interviews seem to indicate that this is no longer an issue.

Figure 22 - Distribution of Districts and Municipal Councils by Budget Execution Rate for GOU and Local Funds

A – Recurrent Spending



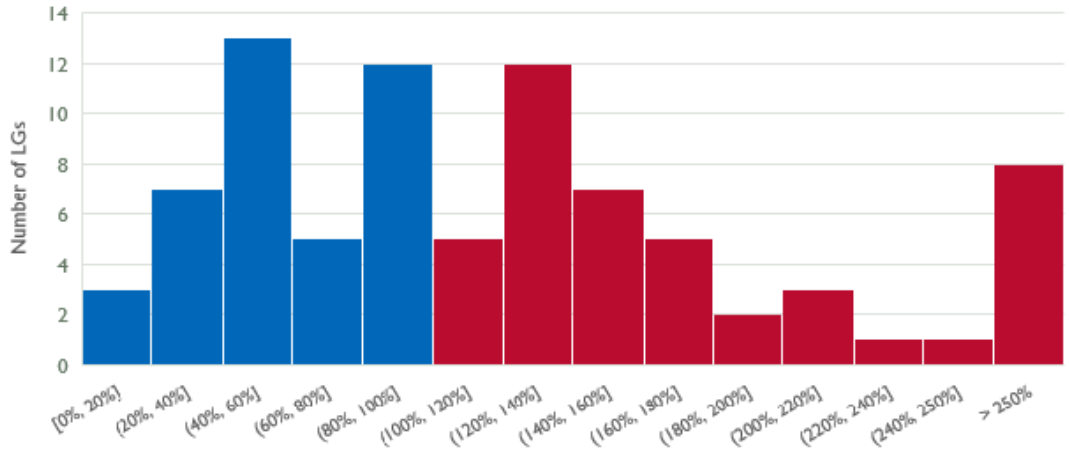
B – Development Spending



Note: Blue designates cases where budget execution is below 100 percent and red designates cases where budget execution exceeds 100 percent
Source: Local Government Quarter 4 Quarterly Performance Reports, FY 2015/16

The range of budget execution for donor related funds was much more extreme, ranging from 8 percent to over 250 percent. About 37 percent of LGs had budget execution rates below 90 percent, and 63 percent had budget execution rates exceeding 100 percent. In the narrative portions of the LG Q4 performance reports, about 17 percent of LGs in the sample noted that predictability of donor funding was an issue for their budget performances. In several of these cases, the issue stemmed from difference in the fiscal years between the donors and GOU, creating a mis-alignment between anticipated and actual timing of receipt of funds. Very high budget execution rates in 2015/16 appear to be associated with the implementation of new vaccines in FY 2015/16, which were not fully accounted for under the budgeted estimates of donor funding.

Figure 23 -Distribution of Districts and Municipal Councils by Budget Execution Rate for Donor Funds



Source: Local Government Quarter 4 Quarterly Performance Reports, FY 2015/16

Many of the LGs with poor budget execution rates are newly established districts, and districts in hard to reach areas. These LGs face significant capacity gaps, while better established and better resourced LGs have the human and technical capacity to better expend funds. LGs face many of the same issues executing budgets as their central government counterparts, but with greater resource and capacity challenges. Lack of adequate technical capacity means only some LGs are on the IFMS, and those that are lack reliable connectivity; this leads to delayed transaction processing. Insufficient training means that even systems that are in place are often not operated properly.

As at the national level, LGs experience significant issues expending their budgets for salaries and wages. Though they also suffer from slow recruitment processes and inadequate resources for performing the recruitment function, the biggest issue at the local level is finding workers to fill needed positions. Medium- and high-skilled workers are hesitant to move to more remote locations, preferring to stay in larger cities. Small financial incentives exist for medical workers to take remote posts, but they are insufficient to attract those with specialized skills, and medical workers employed by municipal councils are not eligible for these financial incentives, even if their place of employment is in a less attractive area of the country. Some workers take jobs initially, but leave within a few weeks or months due to living conditions. Even those who do choose to work in general hospitals and health centers (HCs) often refuse to properly relocate, and instead live in the closest municipality and commute to the rural clinics (when they show up to work at all). This all has a significant effect on the delivery of services. In addition to vacant positions, LGs struggle with staff absenteeism, which delays the approval of expenditures.

There are also significant procurement issues at the local level. LGs face the same knowledge gaps around proper processes and procedures that are experienced at the national level. They also face capacity challenges around developing proper specifications and bidding documents for supplies and services that need to be procured. Most pressingly, even when proper steps are taken to solicit bids, LGs face great difficulty finding reliable suppliers. Districts and municipal councils are often seen as unreliable clients, and so many businesses do not want to risk going into business with them. Of the ones that do, some do not have adequate capacity to provide quality services, but they may be the only suppliers available in the area. These factors combine to result in poor quality procurements and/or unspent balances.

SUPERVISION, REPORTING AND PERFORMANCE EVALUATION

Effective and reliable monitoring and reporting tools are critical to ensuring the implementation of the health sector budget. This leads to the intended outcomes, and ensures that budget planners have the information required to estimate the resources required to meet the country's health service delivery outputs. The linkage between budgetary resources, outputs and outcomes has become all the more important with the movement from OOB to PBB. Uganda has made significant investments over the past several years to expand its performance management systems and to increase its usage.

MINISTRY OF HEALTH

Uganda has implemented a number of different mechanisms within its overall results based management system, including targets set in sector strategies and annual sector work plan, targets set within the budget framework, performance contracts for accounting officers and performance agreements for heads of department, and individual performance assessments for civil servants. The health sector has a robust set of tools to monitor health sector service delivery and public health outcomes. While the Uganda Health Management Information System (HMIS) was established in the 1990s, it has undergone several upgrades and adjustments over time. Some service delivery areas, such as Tuberculosis, have also developed parallel systems supported by development partners to generate additional data. In addition, the IFMIS records and generates a wealth of financial information, and the PBS (and previously the Output Budgeting Tool) includes a platform to produce regular budget reporting documents.

These tools and systems generate a wealth of data and information, but reporting systems have not always been effectively integrated. Analysis of financial performance and service delivery performance tend to be done independent of one another. Finance Committee meetings, up until 2018, were only held once every quarter at MOH and only on an ad hoc basis for other entities. These meetings tended to only focus on the allocations of the quarterly cash limit advised by MOFPED.[21] Similarly, health sector quarterly performance review meetings are held once per quarter to examine trends in key health indicators and flag issues with respect to the completeness and timeliness of reporting. Analysis of service delivery performance and financial performance, are not generally linked in these meetings.

To reinforce synergies with program budgeting and results based management, individual performance tools may be adapted to promote greater accountability at the Program Manager level. Uganda introduced Annual Budget Performance Contracts (ABPCs) for Accounting Officers and annual performance agreements (APAs) in for Directors and Heads of Departments in the late 1990s. With the introduction of program budgeting, accountability for service delivery is increasingly focused at the Program Manager level. While Program Managers, generally at the Director or Head of Department level, would be subject to an APA, these agreements do not create linkages between outputs, outcomes and progress on budget implementation. Moreover, the recent National Service Delivery review found that APAs were not easily enforceable and were not yielding the desired results in terms of improved service delivery performance and increased accountability.[22] Introducing performance contracts at the Program Manager level, including incentives to promote achievement of targets, would help to better align individual incentives to perform with institutional goals and

[21] Kauta, John (2017). "Uganda Health Sector: Budget Execution Bottlenecks Report," USAID Leadership in Public Financial Management II (LPFM II), May 2017.
[22] CSBAG (2017). Independent Evaluation FY 2017/18 Program-Based Budgeting. CSBAG. September – October 2017.

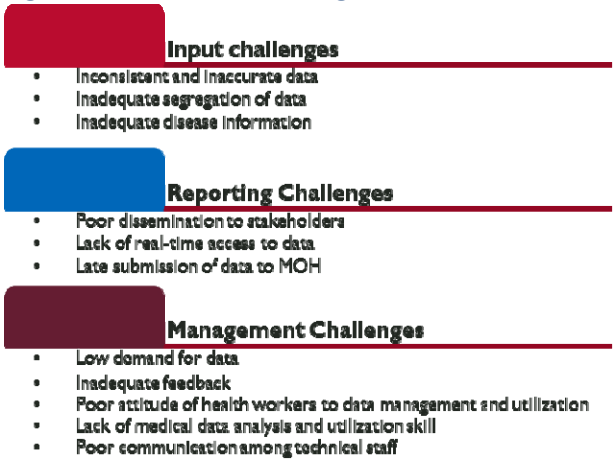
enhance the impact of PBB. Given the significant challenges associated with budget execution, notably procurement, these contracts might include targets related to efficient implementation of program budgets.

LOCAL LEVEL

Local data collection systems have been improving, though challenges continue. The District Health Information Software System version 2 (DHIS2) was introduced in 2011-2012, which greatly increased the completeness and timeliness of local health information reporting.[23] The percent of complete reports feeding into the HMIS from health facilities increased from 75.8 percent in FY2012/13 to 98.8 percent in FY2017/18, and the percent of reports received on time went from 53.3 percent in FY2012/13 to 94.1 percent in 2017/18.[24]

However, in spite of the improved availability of information, data utilization by districts and facilities remains low, a fact reported by some districts in their budget documents and others during in-person interviews. A recent key stakeholder study conducted by the CDC METS program found similar results, as summarized in Figure 24.

Figure 24 – DHMIS Challenges Identified in METS Key Stakeholder Study



Source: Monitoring and Evaluation Technical Support (METS) program, February 2018

There is also a weak linkage between sector targets and incentives for individual performance at the local level. While Accounting Officers for districts and municipal councils have performance contracts, these do not flow down to their technical units. Districts and health facilities generally require annual (or semi-annual) performance evaluations for all staff, but no formal mechanisms exist to force staff to complete them. Incentive structures are also weak. Positive appraisals do not have a corresponding impact on wages, and though they are necessary for promotions, many staff are not in positions where promotion is a likely or desired outcome. Poor appraisals sometimes result in disciplinary action, but this is not consistent. When faced with limited positive incentives, some potential negative incentives, and no real consequence for lack of participation, many LG workers simply opt not to complete their evaluations at all.

[23] https://malariajournal.biomedcentral.com/articles/10.1186/s12936-018-2312-7
[24] MOH-DHI (2018). "Health Sector Quarterly Performance Review: Q3: FY 2017/2018." Ministry of Health Division of Health Information. Presentation at the Health Sector Quarterly Performance Review in Kampala Uganda, 10 May 2018.

To address some of these issues, MOH is working with the World Bank to implement a Results Based Financing (RBF) scheme. This effort builds on lessons learned from an earlier pilot of RBF with 118 facilities (of which 68 were private not for profit) in the early 2000s.[25][26] This initial pilot was followed by several other initiatives including voucher schemes to promote antenatal care visits (ANC), deliveries in health facilities, and quality of health services, among others. The new RBF initiative i will use the non-wage conditional grants to health facilities starting in FY 2018/19 as the main mechanism to direct funds to high performing facilities. Payments to health facilities will be made based on verified quality and quantity of critical reproductive health and maternal and child health interventions.[27] Starting in FY2018/19, this program will be complemented by the Intergovernmental Fiscal Transfer Program for Results (IGFTR P4R), which will increase the PHC Non-Wage Recurrent Grant with both a fixed component distributed based on the criteria set of the overall PHC Non-Wage Recurrent Grant , and a performance based component distributed based on a set of results oriented criteria.

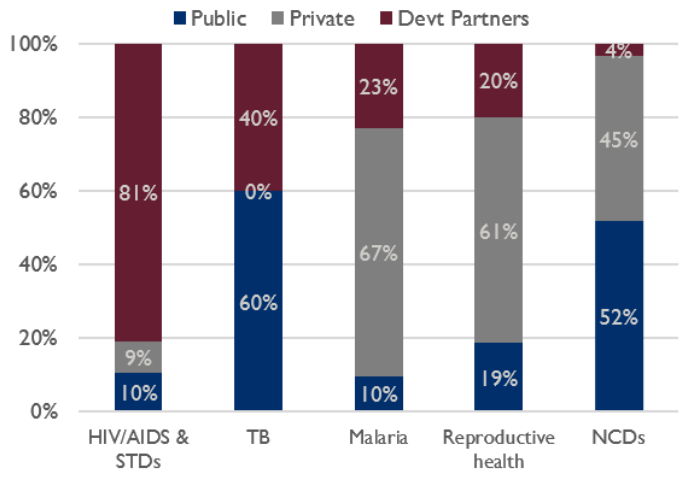
[25] This pilot included an experimental design in which one group (A) maintained only the pre-existing financial arrangements, a second group (B) with only a grant, and a third group (C) with both a grant and bonuses. After 2.5 years the facilities in group C did not perform higher than the control groups (A and B) potentially because the bonuses were too small. There did appear to be an improvement associated with allowing the facilities flexibility in controlling how to use institutional grants.
[26] Morgan, Lindsay (2010). Some days are better than others: lessons learned from Uganda's first results-based financing pilot. World Bank Brief, 53985, Africa Region, April 1, 2010.
[27] World Bank (2016). Project Appraisal Document: Uganda Reproductive, Maternal and Child Health Services Improvement Project. Health, Nutrition and Population Global Practice Africa Region ,July 14, 2016.

PRIORITY SERVICE DELIVERY AREAS

FINANCING PRIORITY SERVICE DELIVERY AREAS

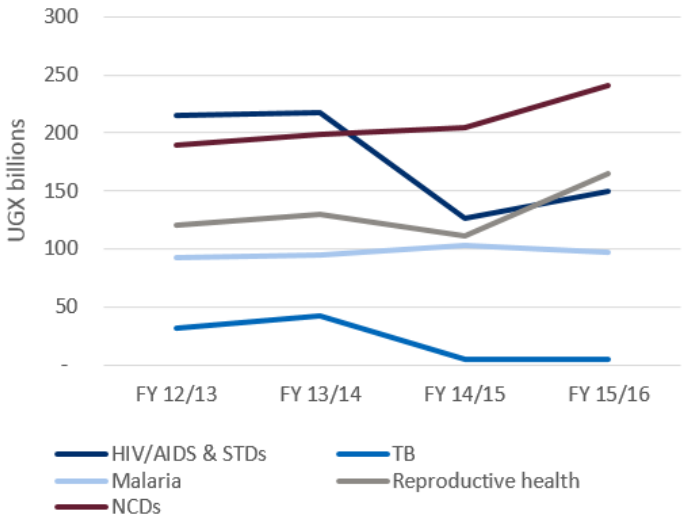
The GOU of Uganda's National HSDP outlines an ambitious program of activities to improve the health outcomes of the country. This plan sets out three thematic areas of work, including communicable disease prevention and control (with a particular focus on outcomes related to HIV/AIDS, TB, and Malaria), NCD prevention and control, and health promotion across life's course (maternal and child health).

Figure 25 - Sources of Financing for Major Service Delivery Priorities (FY 12/13 – FY 15/16)



Source: National Health Accounts 2013/14 and 2015/16

Figure 26 - Trends in Spending in Key Service Delivery areas (GOU Only) (FY 12/13 – FY 15/16)

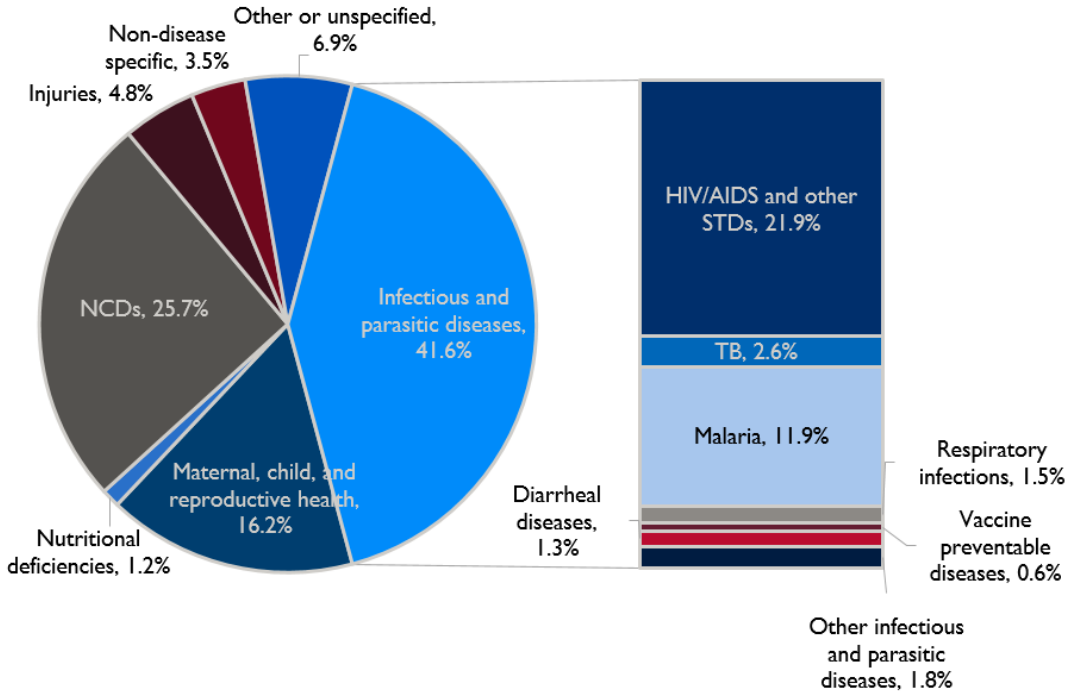


Source: National Health Accounts 2013/14 and 2015/16

The government focuses its spending on a few priority areas, with households and donors providing the majority of financing for several major areas. Over the period FY 12/13 through FY 15/16, the government provided only about 10 – 20 percent of financing for HIV/AIDS, Malaria, and reproductive health related programming, with development partners supporting the majority of costs in the case of HIV/AIDs and private source (i.e. households) providing for the majority of spending on Malaria and Reproductive Health. Conversely, Government took a lead role in financing expenditures related to TB and NCDs (Figure 22). Over the past several years, government funding for NCDs and maternal and child health related work increased, while funding of TB and HIV/AIDS related work fell (Figure 26**Error! Reference source not found.**).

When taken as a percent of total spending, the government focuses roughly about 41.6 percent of its resources on infectious and parasitic diseases, a majority of which goes toward HIV/AIDS and other Sexually Transmitted Diseases (STDs) (which represents about 21.9 percent of overall spending) (Figure 27). Within infectious diseases, malaria takes the next largest portion representing about 11.9 percent over overall health spending. NCDs combined represent about 25.7 percent of spending, while maternal, child, and reproductive health represents about 16.2 percent. The relatively strong weight of NCDs as a portion of the government health expenditures appears to be due, at least in part, with relatively low funding by donors for this area. It is worth noting that about two thirds of the funds allocated to NCDs go toward oral health programming, rather than core NCDs such as diabetes and cardiovascular diseases.

Figure 27 - Distribution of government health expenditure across disease conditions, FY 15/16



Source: National Health Accounts 2015/16

The sub-sections that follow examine financing trends, effectiveness and efficiency, as well as equity issues for each of the key service delivery areas, including: (1) HIV/AIDS and TB prevention and treatment; (2) malaria prevention and control; (3) maternal and child health; (4) immunization; and (5) NCDs.

HIV/AIDS PREVENTION AND TREATMENT

Policy Priorities

HIV/AIDS remains the greatest public health threat in Uganda. Although Uganda has instituted a number of measures to combat the epidemic, the global goal to end HIV/AIDS by 2030 requires doubling of efforts in a multi-sectoral approach. In this regard, the Presidential Fast Track initiative to Ending HIV/AIDS in Uganda by 2030, was launched on 6th June 2017. The Presidential Fast Track

initiative requires that all sectors engage in a process of mainstreaming HIV/AIDS for a multi-sectoral action to scale up AIDS responses. This Presidential initiative reinforces the goals of the National HIV and AIDS Strategic Plan 2015/2016 – 2019/2020 (NSP), which has the overall goal defined as "Towards Zero new infections, Zero HIV and AIDS-related mortality and morbidity and Zero discrimination." Uganda Aids Commission identified four thematic areas of activities to achieve this goal, as detailed in Table 10.

Table 9 - Key policy thematic areas and corresponding objective

Thematic Area	Goal
Prevention	To reduce the number of new youth and adult infections by 70% and the number of new pediatric HIV infections by 2020
Care and treatment	To decrease HIV-associated morbidity and mortality by 70% through achieving and maintaining a 90 viral suppression by 2020
Social support and protection	Reduced vulnerability to HIV and AIDS and mitigation of its impact on PLHIV and other vulnerable groups
Systems strengthening	An effective and sustainable multi-sectoral HIV and AIDS service delivery system that ensures universal access and coverage of quality, efficient, and safe services to the targeted population by 2020.

Source: National HIV and AIDS Priority Action Plan 2015/16—2017/18

Financing Trends and Sustainability

Although HIV/AIDS received the bulk of government funding for infectious diseases, overall government funding has decreased in both relative and absolute terms from FY12/13 to FY15/16. HIV/AIDS funding fell from about UGX 215 trillion in FY 11/12 to about UGX 127 trillion in FY 14/15, rebounding slightly to UGX 150 trillion in FY15/16. This represents a 30 percent decrease in funding over the period, despite the effects of population growth, increasing prices, and depreciation of the exchange rate on service delivery costs. As a proportion of total spending, government funding for HIV/AIDS from about 33 percent in FY12/13 to 18.5 percent in FY 15/16.

This drop in government funding appears to be due in part to crowding out by development partner funds. On average over the period, donors contributed about 81 percent of funding for HIV/AIDS, compared to 10 percent from GOU and 9 percent from private sources. Over the period FY 12/13 through FY 15/16, development partner funding for HIV/AIDS rose 35 percent from UGX 1,138 trillion to UGX 1,622 trillion. Private sources of funding remained relatively constant (Table 11).

Table 10 - Funding Sources and Trends for HIV/AIDS

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Average		% Change FY 12/13 to FY 15/16
	Amount (UGX Millions)				(UGX Millions)	%	
Public	215,213	217,177	126,950	150,104	177,361	10%	-30%
Private	151,561	151,967	140,566	153,902	149,499	9%	2%
Devt Partners	1,137,568	1,216,253	1,622,297	1,518,852	1,373,743	81%	34%
TOTAL	1,504,342	1,585,397	1,889,814	1,822,859	1,700,603	100 %	21%

Source: NHA 2013/14; 2015/16

This high level of reliance on donor funding raises concerns regarding the sustainability of HIV/AIDS service delivery. There is a risk of disruption of key activities because donor funds are not only unsustainable but also less predictable compared to domestic resources.

Efficiency

The costs of pharmaceuticals and laboratory service are a main determinant of service delivery costs for HIV/AIDS treatment. A 2016 study found that ARVs accounted for between 44 percent and 66 percent of the costs of service delivery, while other drug costs ranged between 4 percent and 15 percent, depending on the regimens provided.[28] Laboratory costs accounted for between 2 percent and 13 percent. A 2013 study explored how the costs of HIV/AIDs treatment differed between public and private health facilities in Uganda, and found that, among the facilities in their sample, public hospitals had about 12 percent higher costs per adult patient than private hospitals (UGX 655,018 vs. UGX 582,894). Public hospitals tended to have lower staff costs per patient, but had higher costs for medicines and laboratory services (though patients do not incur these costs). At the HC level, however, public HCs tend to have much lower cost per adult patient than private HCs (UGX 335,625 vs. UGX 512, 073), largely driven by lower cost of personnel. The study found similar outcomes for children.[29] High costs of drugs at public facilities stems from the use of different procurement systems between the government and Global Fund. The GOU, through the National Medical Stores, procures some ARVs from a local manufacturer and the rest from the international market. The government and the Global Fund separately negotiate their ARV purchase on the international market, which denies the Uganda Government the benefit from bulk purchase pricing enjoyed by the Global Fund . [30] [31]

Innovations in delivery models being used in the NGO sector may provide opportunities to alleviate the burden on busy health care professionals and reduce costs of service delivery. These "task shifting models" delegate more routine tasks to nurses and "expert clients," while leaving initiation of new clients and treatment of the critically ill to doctors. Facilities included in the model with more efficient staffing arrangements were 37 percent more cost efficient with respect to their personnel and administrative costs.[32]

Some reports have showed persistent stock-outs of ARVs that are linked to inefficiency in planning and coordination and use of resources. In a Global Fund survey[33], about 70 percent of health facilities lacked at least on tracer medicine for HIV/AIDS, with the main reasons being inefficiency in planning and coordination. For example, the Ministry of Finance is sometimes unaware of the financial implications of changes to treatment protocols, as well as a lack of timely and accurate information for coordinated responses. The other contributor to stock-outs is the use of ARVs for treating other illnesses such as Hepatitis B, which are not considered in ARV quantification.

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[28] Vu, Lung et al. "Annual cost of antiretroviral therapy among three service delivery models in Uganda." J Int AIDS Soc. 2016; 19(5Suppl 4): 20840. Published online 2016 Jul 20. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4956730/

[29] Moreland, Scott, et al. The Costs of HIV Treatment, Care, and Support Services in Uganda. Futures Group/MEASURE Evaluation. USAID MEASURE Evaluation cooperative agreement. February 2013

[30] Koseki, S., T. Fagan, and V. Menon. 2015. Sustainable HIV Financing in Uganda. Washington, DC: Futures Group, Health Policy Project. Available: https://www.healthpolicyproject.com/pubs/2877_UgandaHIVFinancing.pdf

[31] Lyatuu, Justus. "Ugandan-made ARVs too Costly." *The Observer.* September 21, 2016. Available: http://observer.ug/news-headlines/46565-ugandan-made-arvs-too-costly

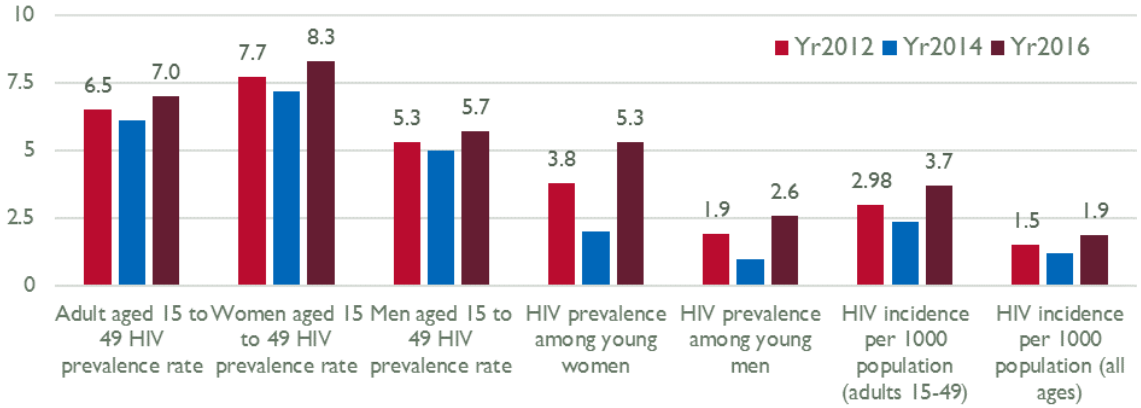
[32] Vu, Lung et al. "Annual cost of antiretroviral therapy among three service delivery models in Uganda." J Int AIDS Soc. 2016; 19(5Suppl 4): 20840. Published online 2016 Jul 20. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4956730/

[33] Global Fund (2016) Audit Report: Global Fund Grants to the Republic of Uganda. Global Fund. Geneva. Available: https://www.theglobalfund.org/media/2646/oig_gf-oig-16-005_report_en.pdf

Effectiveness

Effectiveness of HIV/AIDS interventions was assessed based on three key outcome indicators of effectiveness: HIV/AIDS prevalence, HIV case incidence, and HIV/AIDS- related mortality (Figures 28 and 29).

Figure 28 - HIV/AIDS prevalence and incidence rates (2012 - 2016)

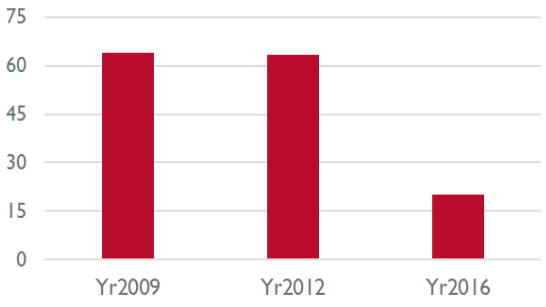


Source: UNAIDS, 2017

Despite expanded ART coverage, high condom use and HIV test rates, HIV prevalence rose from across all age-groups from 6.5 percent in 2012 to 7.0 percent by the end of 2016 (Figure 28). Prevalence is especially high among women aged 15 – 49 years at 8.3 percent, up from 7.7 percent in 2012, suggesting that this is the age-group that HIV control interventions should target. HIV incidence (adults 15 – 49 years) also increased from about 5.3 per 1000 population in 2012 to 5.7 per 1000 population. Incidence (all ages) also rose from 1.5 per 1000 population in 2012 to 1.9/1000 population in 2016.

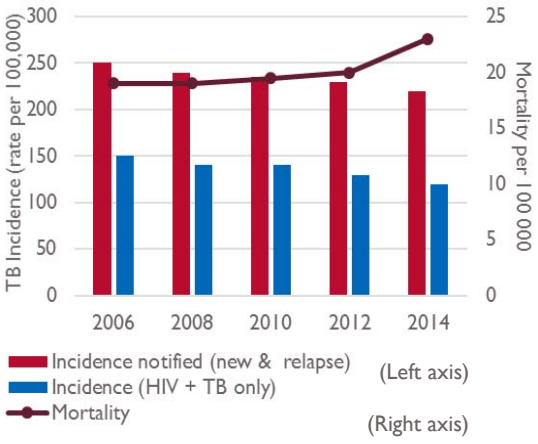
These trends indicate that the interventions as rolled out have been largely ineffective in controlling new HIV- infections. However, the country has been able to stabilize HIV/AIDS mortality rates from a high of about 60,000 deaths in 2012 to 20,000 deaths per annum as of 2016 (Figure 29 below).

Figure 29 - HIV/AIDS mortality in thousands (2009 - 2016)



Source: UNAIDS, 2017

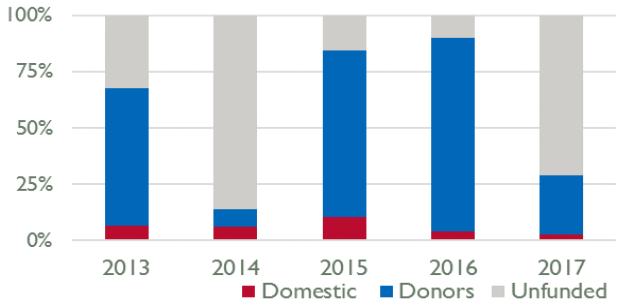
Figure 30 - TB Burden (Incidence and mortality)- Rate per 100 000 population per year



Source: UNAIDS, 2017

HIV/AIDS and TB often have integrated interventions. However, TB services in Uganda are faced with severe lack of funding. The WHO (2018) indicates that the total budget requirements for TB services for FY2017/18 was US 54 million of which domestic sources accounted for 3 percent, development partners represented 26 percent and 71 percent of the required budget remained unfunded (Figure 31). Donor funds formed the bulk of the funds in 2015 and 2016, but abruptly declined from about US$32m in 2016 to about US$16m in 2017, which indicates the unsustainable nature of non-domestic sources of financing.

Figure 31 - TB Programming Needs, percent funding



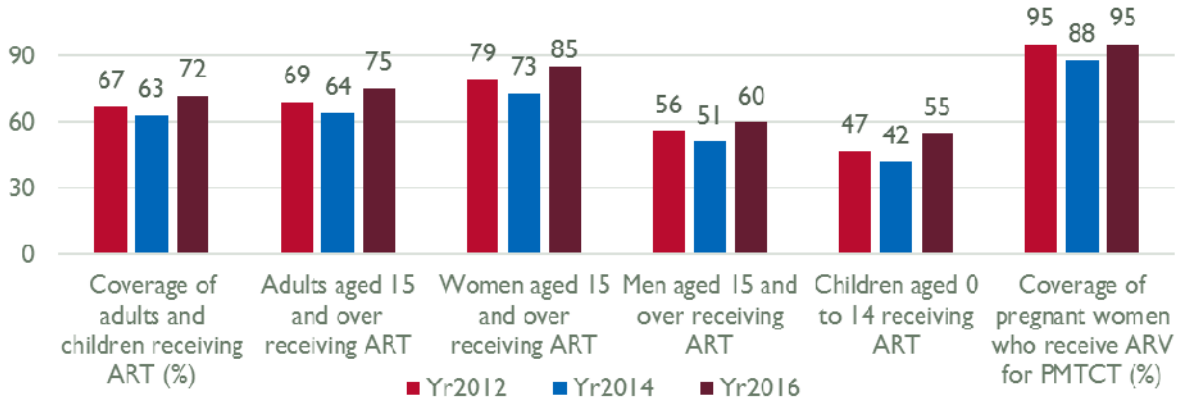
Source: World Health Organization (2018)

The implications of the severe lack of funds for TB can be seen in the key outcomes (Figure 30). For example, treatment success rate is below the 85 percent mark recommended by the WHO; there is very slow progress in arresting the incidence rates; and TB-related mortality has been on the rise since around 2004.

Equity

While coverage of HIV/AIDS service delivery has expanded notably between 2012 and 2016, some groups of the population appear to have less coverage to strategic HIV/AIDS control measures such as ARV coverage, condom use and HIV testing. In general, ARV coverage has expanded between 2012 and 2016 (Figure 32).

Figure 32 – Trends in ARV coverage (% of total)



Source: UNAIDS, 2017

Although ART coverage is high, signifying satisfactory progress on a key HIV/AIDS preventive intervention, there are worrying inequities in ART coverage between men and women and children (Figure 32). Up to 85 percent of female HIV/AIDS patients are receiving ART compared to 60 percent of their male counterparts and only 55 percent of children. It is not immediately clear what is driving these disparities, which should draw the attention of policy makers. Scaling up ART coverage to meet the 90-90-90 objectives is imperative if the HIV/AIDS elimination is to be achieved and this involves ensuring that no section of the population of the patients is marginalized from intervention activities.

There are disparities in coverage of HIV/AIDS prevention activities such as condom use and HIV testing across gender, age, residence (rural/urban), region, level of education and wealth status. Table 12 shows that condom use and HIV testing are quite high in Uganda which may suggest the ability of the country to contain the spread of HIV. The use of condoms is highest from ages 25 to 49 years for both sexes. Men slightly show higher utilization of condoms which peaks at age-group 30 -34 years (95% men and 90% women). In terms of HIV-testing, women (all ages) have a higher test rate than men, which peaks at age-group 30 -34 where use of condoms is also highest. This suggests that ages 30 – 34 years are least vulnerable to HIV-infection while ages 15 – 19 years are the most vulnerable.

There are also disparities between rural and urban areas of the country. Even though minimal, urban areas reported higher condom use and higher HIV-tests than rural areas among women and men. HIV-testing is particularly low among men residing in rural areas. Similar inequities between men and women can be seen across the 15 regions in

Table 11 - HIV/AIDS prevention activities by age

	% Using condoms		% Ever tested & received results	
	Female	**Male**	**Female**	**Male**
AGE				
15-19	85.5	87.1	71.2	56.9
20-24	81.8	85.6	53.6	44.1
25-29	89.7	89	90.7	74.4
30-34	90.1	88.7	95.4	83
35-39	88.8	88.5	91.9	81.8
40-49	85.9	88.2	89.8	78.4

Source: DHS 2016/17

Table 12 - HIV/AIDS prevention activities by location and wealth status

	% Using condoms		% Ever tested & received results	
	Female	**Male**	**Female**	**Male**
RESIDENCE				
Urban	89.7	88.9	87.4	78.3
Rural	86.2	87.5	81.6	67.7
REGION				
South Central	92.2	88.7	86.3	74.8
North Central	91.6	86.8	84.6	64.4
Kampala	90	88	87.9	84.9
Busoga	90.8	91.8	76.6	62.1
Bukedi	85.8	95.5	75.3	52.3
Bugisu	92.2	70.7	78	59.6
Teso	82.9	95.6	89.3	81.7
Karamoja	75.9	47.4	84.9	39
Lango	81.2	88.5	83.9	70.5
Acholi	86.6	90.3	87.8	83.6
West Nile	68	88.1	80.8	77.3
Bunyoro	90.2	87.3	78.5	68.3
Tooro	86.1	94.2	86.2	75.2
Kigezi	90.1	81.8	80.2	68.3
Ankole	88.4	85.4	84.7	72.8
WEALTH STATUS				
Lowest	80	84.9	81.2	64.3
Second	85.4	86.9	80	64.4
Middle	88.1	89.8	81.6	66.3
Fourth	88.8	87.4	83.4	69.3
Highest	91.4	89.5	87.6	83.3
TOTAL	87.1	87.8	83.1	70.4

Source: DHS 2016/17

Uganda with the most affected region being Karamojong and particularly the men in this region. For example, where 85 percent of Karamojong women have tested for HIV and received results, only 39 percent of their male counterparts did so. This can complicate HIV/AIDs control when a section of the population, for one reason or another, is not responsive to ongoing control interventions. Use of condoms is lowest among women in Bukedi and West Nile regions.

Wealth status is also an important determinant of use of condoms and taking HIV tests among men and women. Table 13 indicates that poor groups and less educated individuals are less likely to use condoms and take HIV tests compared to their wealthier counterparts.

MALARIA PREVENTION AND CONTROL

Policy Priorities

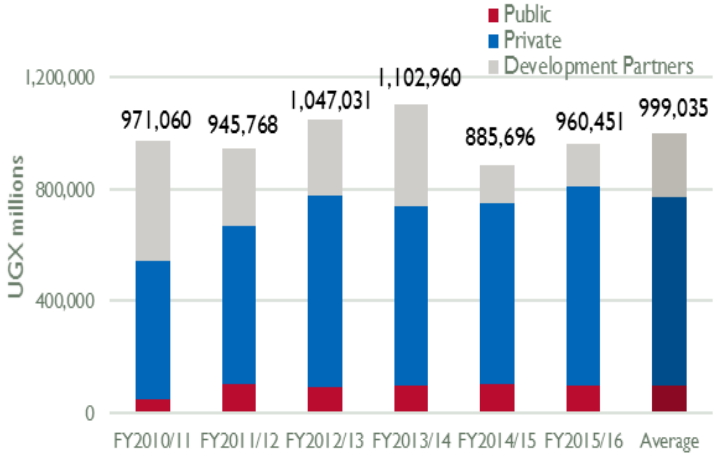
Malaria is a major public health problem in Uganda and remains a leading cause of morbidity in health facilities. Clinically diagnosed malaria is the leading cause of morbidity and mortality, accounting for 30 to 50 percent of outpatient visits at health facilities, 15 to 20 percent of all hospital admissions, and up to 20 percent of all hospital deaths (MOH, Uganda). Deaths that occur at home, especially among children under age 5, remain unreported. Malaria is endemic in approximately 95 percent of Uganda.

The Ugandan Government policy goal is to reduce mortality due to malaria by 80 percent of the 2010 levels and reduce morbidity due to malaria by 75 percent of the 2010 levels, to set the stage for elimination. The key policy strategies toward this goal include the following preventive strategies:

- Timely and effective malaria case management using ACTs as first-line treatment for uncomplicated malaria;
- National scale-up of the use of long-lasting insecticide-treated bed-nets;
- Prevention of malaria in pregnancy; and
- Indoor residual spraying.

Significant progress in malaria control has been made since Uganda became a focus country of the President's Malaria Initiative (PMI) in 2005; however, a lot still needs to be done to build the capacity of the National Malaria Control Program to be able to progressively work toward malaria elimination.

Figure 33 - Sources of financing for malaria (2005 – 2016)



Source: NHA 2011/12, 2013/14, 2015/16

Financing Trends and Sustainability

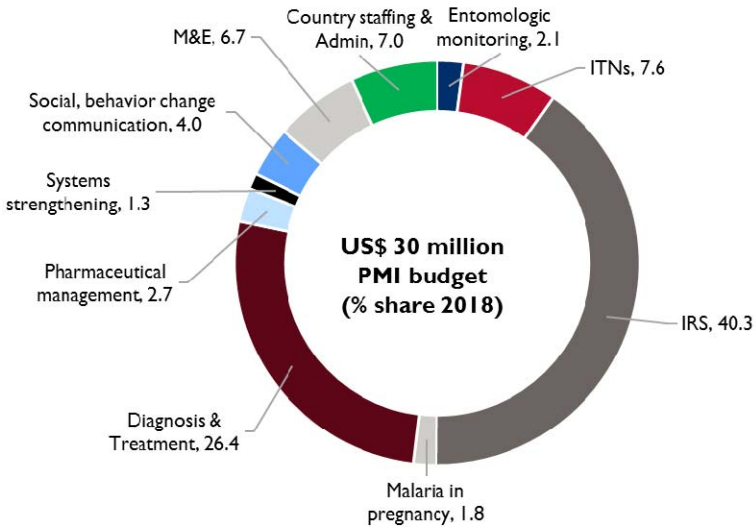
Total funding for malaria programming rose slightly during FY2010/11 through FY 13/14, only to begin to decline in FY 14/15 (Figure 33). GOU funding has been relatively limited over the whole period, representing 10 percent of total malaria funding on average. Households represented about 67 percent of funding, while donors represented about 23 percent on average, signaling potential future issues with sustainability. There is clear evidence of declining donor support for the malaria program yet there is no indication that the government is replacing donor funds with its own funds. While government allocations to malaria programming rose from FY2010/11 through FY 14/15, they decreased in FY 15/16 in absolute and as a share of government budget; i.e. from UGS 102,900m in FY2014/15 to UGX 97,400 million in FY2015/16 (Figure 31). This has the potential to reverse the gains made on malaria over the past several years.

Efficiency

In terms of allocative efficiency, about 52 percent of the entire PMI budget (one of the largest malaria financing mechanisms in Uganda) goes into funding preventive activities particularly in line with government policy to prioritize malaria prevention. About 29 percent funds curative care and 19 percent of funds go towards other activities including personnel and administration, M&E, social and behavior change communication and systems strengthening.

On the other hand, government funding for malaria remains critical but minimal. The WHO (2017)[35] indicates that nearly 70 percent of total government funding for malaria goes into human resources and technical assistance, with medicines and insecticide and spray materials taking much of the remaining 30 percent.

Figure 34 - PMI malaria expenditure by functions (% share)



Source: PMI Malaria Operational Plan[34]

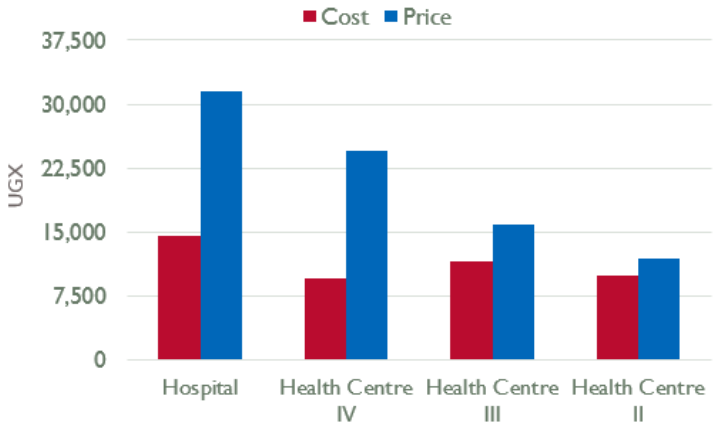
With respect to the technical efficiency, or achieving the maximum outputs for a given level of funding, the cost of malaria medications (particularly ACTs) represent an opportunity for improved efficiency. The main driver of malaria treatment prices is the number of players in the supply chain including the importer, wholesaler and outlet/retailer (e.g., pharmacy, drug store or clinic). The mark-ups added at each supply chain step contributes

[34] President's Malaria Initiative Uganda: Malaria Operational Plan FY 2018. Available: https://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-2018/fy-2018-uganda-malaria-operational-plan.pdf?sfvrsn=11
[35] WHO 2017. Available: http://www.who.int/malaria/publications/country-profiles/profile_uga_en.pdf

significantly to price variations by sector and region. In some cases, the overall mark-up in private clinics compared to other outlets is as high as 325 percent.[36]

Malaria treatment unit costs and prices also vary in private facilities (Figure 35). The high variations represented by hospitals is due to payments for high cadre health workers such as doctors and other specialists.

Figure 35 - Malaria treatment: Comparison of unit costs and price



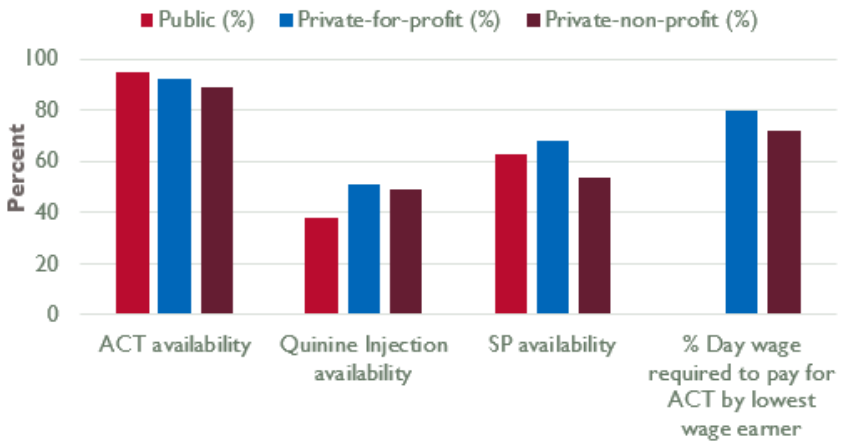
Source: HEPS Uganda and Samasha Medical Foundation

In the private sector, failure to effectively implement a private sector co-payment mechanism has affected access (availability, accessibility and affordability) to subsidized antimalarial medicines in private health facilities, pharmacies and medicine outlets. As a result, medicines are sold at UGX 5,000 beyond the recommended price of UGX 3,500.30.[37] Overall, even though all health facilities (public, private-for-profit and private-not-for-profit) report that up to 90 percent and above have ACTs available, being a first-line treatment for uncomplicated malaria means that many Ugandans still cannot access treatment as some facilities have not stocked ACTs (Figure 36). The other anti-malarials are poorly stocked in all sectors (public, private-for-profit and private-not-for-profit). However, the public sector has the lowest availability of quinine injections with only 38% of facilities stocking the medicine.

Anti-malarial sales in private facilities remain unaffordable for ordinary Ugandans; e.g. as demonstrated in Figure 36, the lowest paid Ugandan government worker spends 80 percent and 72 percent of a day's wage respectively, to be able to purchase ACTs from private-for-profit and private-not-for-profit facilities.

[36] Medicines for Malaria Venture (2008) Supply Chain and Price Components of Antimalarial Medicines: Uganda. Available: http://haiweb.org/wp-content/uploads/2015/07/Supply-Chain-and-Price-Componenets-of-Antimalarial-Medicines-in-Uganda.pdf
[37] Coalition for Health Promotion & Social Development (HEPS) 2014. Cost and Pricing: An Assessment of Private Health Facilities in Uganda. Cardno Emerging Markets USA, Ltd. Available: http://uhfug.com/wp-content/uploads/2017/04/An-assessment-Of-Private-Health-Facilities-In-Uganda.pdf

Figure 36 - Availability and affordability of anti-malarials



Source: Uganda Medicine Price Monitor, Jun 2015

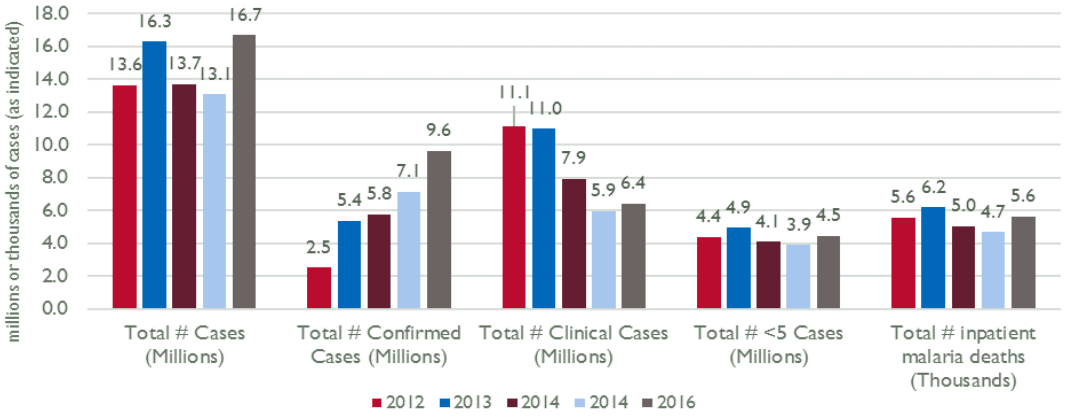
There is also remarkable inefficiency in the use of antimalarials especially first-line ACTs for treatment of uncomplicated malaria. The MoH's management information system indicates that up to 43 percent of patients reporting fever are treated of malaria without confirmed diagnosis and/or after negative laboratory results. This also raises the risk of resistance. A policy revision to allow testing using rapid diagnostics kits at private drug outlets has been initiated to reduce presumptive treatment of malaria.[38]

Effectiveness

As noted above, much of the envelope of funding for malaria control and treatment is directed toward human resources and technical assistance to the detriment of treatment and prevention programs. While this support has resulted in strong improvement in malaria reporting (DHS 2015/16), 39 progress on improving key indicators such as case incidence, admissions and mortality is mixed (Figure 37). Total number of malaria cases spiked in 2013, rising from about 14 million in 2012 to 16.3 million. In 2014-15, the country undertook significant investments in vector control, leading to a rapid decline to 13.1 million in 2014. These gains were reversed in 2016, when malaria cases spiked again to about 17 million. Over the same period, the total number of confirmed cases also rose from 2.5 million in 2012 to 9.6 million 2016, although this could also be a contribution of improved diagnostics.

[38] The Global Fund (2016) Audit Report: Global Fund Grants to the Republic of Uganda. Global Fund, Geneva
[39]Uganda Bureau of Statistics (UBOS) and ICF. 2017. Uganda Demographic and Health Survey 2016: Key Indicators Report. Kampala, Uganda: UBOS, and Rockville, Maryland, USA: UBOS and ICF.

Figure 37 - Key malaria case indicators

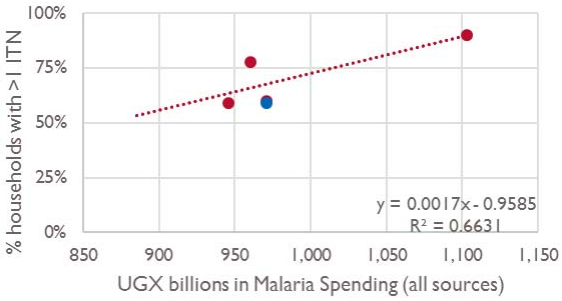


Source: UBOS & ICF 2017

Despite significant investments in malaria control, not only have overall cases of malaria increased but inpatient mortality has been variable. For example, in 2012 inpatient mortality was about 5,600 deaths, which declined to 4,700 in 2014 but then rose again to about 5,600 in 2016. It is noteworthy that the negative outcome indicators correspond with a period of declining funding for malaria programs where key interventions such as ITNs and IRS did not seem to get priority in funds allocation.

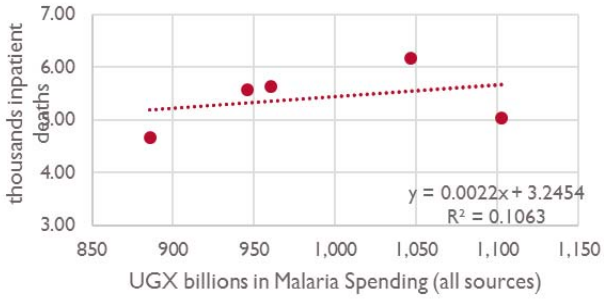
There is a positive relationship between increased spending and the reported availability of ITN, as demonstrated in Figure 38. Increased spending does not, however have a strong direct relationship with reduced inpatient malaria deaths, however, as there appears to be only a slight positive relationship between the two factors (Figure 39). This may indicate that spending tends to be responsive to increases in malaria mortality rather than the inverse.

Figure 38 – Correlation between spending on malaria and in availability of ITNs



Source: NHA 2011/12; 2013/14; 2015/16

Figure 39 – Correlation between spending on Malaria and in patient malaria deaths

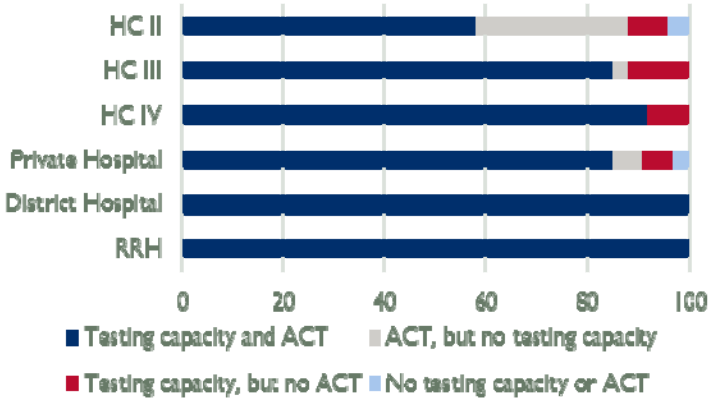


Source: NHA 2011/12; 2013/14; 2015/16

Gaps in the availability of medicines (discussed above) and testing materials at the facility level may explain some of the mixed results on effectiveness of malaria prevention and treatment programs. Effective case management of malaria requires that health facilities have both malaria treatment and diagnostics on hand in order to identify cases of malaria and provide treatment. The 2014 report on

the ABCE survey found that while malaria diagnostics were widely available, there appear to be gaps in availability of either ACTs or diagnostics – particularly at lower level facilities (Figure 40). [40]

Figure 40 - Availability of equipment and supplies to provide malaria health services



Source: ABCE Survey Report (2014)

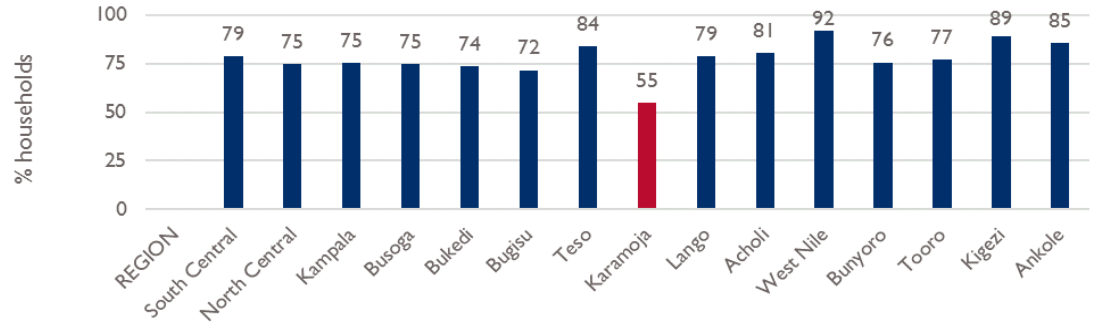
Equity Analysis

The Uganda Malaria Quarterly Bulletin 2016, indicates inequities in malaria incidence across the fifteen regions. The worst affected are Eastern, Karamoja, North and South West regions which experienced increases in malaria incidence ranging from 19 percent in the East to 120 percent in the North. Karamoja had 44 percent increase and the North West experienced an increase of 100 percent. The rest of the regions experienced decreases in malaria incidence of between -3 percent and -72 percent. The regions that reported high malaria incidence and prevalence generally have high ownership of ITNs except South West (potentially due to the high altitude), which reports one of the lowest malaria prevalence rates in Uganda. However, there is a likely correlation between high malaria incidence rate and poverty as these regions have the highest poverty rates ranging from 70 to 80 percent of the population living below the poverty line.[41] While these differences could be linked to several reasons around malaria control strategies and community responses to these strategies, one of the main reasons for the reported increase in malaria incidence particularly in Karamoja region is the low ownership of ITNs (55 percent) compared to the rest of the regions where ITN ownership overall is higher than 70 percent of households (Figure 41).

As shown in the figure above, differences in ITN ownership are also reported between rural and urban households and between wealth quintiles. Per the most recent household survey, ITN ownership in the poorest households stand at 71 percent compared to 84 percent in the richest households. In terms of treatment for malaria, higher costs in hospitals than in lower level facilities likely benefits the poor and rural who tend to use more of lower level facility services. However, a report by Medicines Transparency Alliance[42] indicates that all types of health facilities in rural areas where the majority of poor Ugandans live, have lower availability of medicines than urban areas.

[40] ABCE survey
[41] National Malaria Control Programme, Abt Associates and the INFORM Project (2013). An epidemiological profile of malaria and its control in Uganda. A report prepared for the Ministry of Health, the Roll Back Malaria Partnership and the Department for International Development, UK. October, 2013
[42] Medicines Transparency Alliance (2015) Available: http://apps.who.int/medicinedocs/documents/s22317en/s22317en.pdf

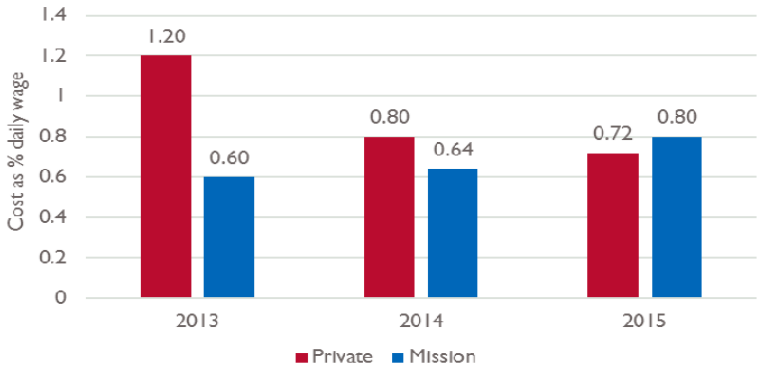
Figure 41 – Percent of households with at least an ITN (by region)



Source: UBOS 2017

The reliance on private and non-for-profit health facilities in some areas of the country can also raise issues of equity. In areas where there is not a public facility nearby, or when medicines might not be available at public facilities, these may be the main service providers. Data from the Uganda Medicine Price Monitor demonstrate that the prices for a round of malaria treatment (Artemether/Lumefantrine tab 20/120mg) has fallen in private facilities from more than an average day's wage in 2013 to about 0.72 days' wages in 2015. Over the same period, costs in mission facilities rose from 0.6 days' wages to about 0.8 days' wages (Figure 42). [43]

Figure 42 – Costs of Malaria treatments in non-GOU facilities (% daily wage)



Source: Uganda Medicine Price Monitor, Sept. 2013, Sept 2014, Jun 2015

MATERNAL AND CHILD HEALTH

Policy Priorities

The global burden of disease (2016) shows that maternal and neonatal health conditions contribute about 22 percent of years of life lost (YLL) in Uganda.[44] To address the public health burden resulting from maternal and child health conditions, MOH defined strategic policy goals to achieve the longer term Sustainable Development Goal (SDG) targets by 2030. These include the following:

[43] Based on the daily wage of lowest paid government worker in 2013, this was Ushs. 5200; in 2014 and 2015 it was UGX 6,255
[44] Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017. Available from http://ghdx.healthdata.org/gbd-results-tool.

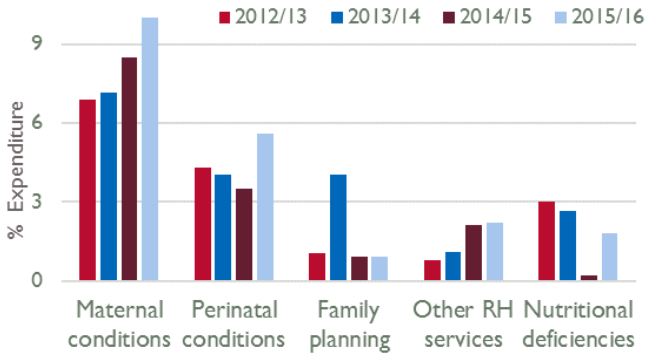
- Improving maternal health by: tackling the main causes of maternal deaths in order to reduce maternal mortality rates; improving skilled birth attendants, and improving antenatal care.
- Ending preventable newborn and under-5 mortalities. This is achievable by identifying and addressing the main causes of mortality.
- Improving adolescent health by making efforts to control teenage pregnancies, child marriages and scaling up contraceptive use.
- Ending malnutrition.
- Strengthening family planning activities.
- Working toward UHC, among others.

To support this ambitious agenda, Uganda is planning to establish a National Health Insurance Scheme and promote voucher programs to increase demand-side financing for the use of family planning and safe motherhood services by the poor. [45]

Financing Trends and Sustainability

The government has devoted significant resources toward maternal and child health programs relative to other service delivery priorities. Overall, maternal and child health programs received 16.2 percent of government funds, trailing only HIV/AIDS (21.9%) and oral conditions under NCDs (17.2%), and exceeding malaria (11.9%). Moreover, the proportion of spending that maternal and child health receives overall has been increasing between FY 12/13 and FY 15/16 (Figure 43).

Figure 43 – GOU spending on reproductive health



Source: NHA 2013/14 and 2015/16

Table 13 - Spending on Maternal and child health, average FY 12/13 - FY 15/16)

	Private		Public		Devt Partners		Total
	UGX Millions	%	*UGX Millions*	%	*UGX Millions*	%	*UGX Millions*
Maternal conditions	252,793	67%	73,105	19%	54,143	14%	380,041
Perinatal conditions	180,547	78%	30,122	13%	21,521	9%	232,190
Family planning	5	0%	11,588	20%	47,802	80%	59,395
Other reproductive health (n.e.c.)	5	0%	16,932	47%	19,319	53%	36,255
TOTAL	**522,809**	**67%**	**131,747**	**17%**	**122,408**	**16%**	**776,963**

Source: NHA 2013/14 and 2015/16

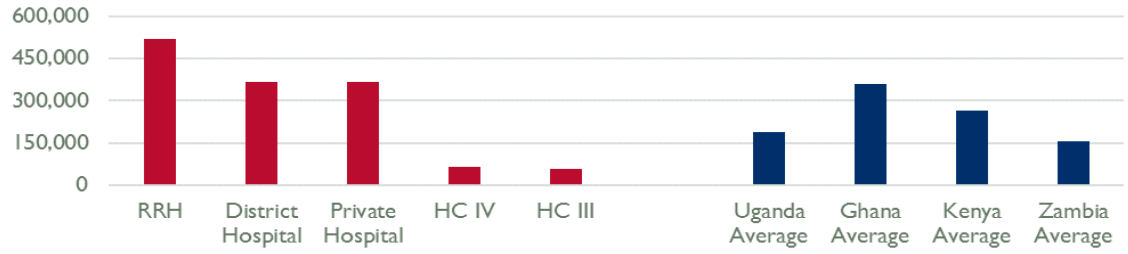
[45] http://www.familyplanning2020.org/entities/80 ; http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2018/02/Uganda_FP2020_Commitment_2017.pdf

Although a significant portion of government spending is dedicated to maternal and child health issues, households (private sources) bear the majority of costs for service delivery in this area (Table 14). Financing health care primarily through out of pocket by households is highly inequitable as the cost burden is borne by individuals.

Efficiency

While unit costs are not available across the full range of maternal and child health services, analysis of facility level data on the costs of delivery demonstrates a wide variety of costs. Overall, Uganda has a lower average cost of a delivery when compared with other countries in Sub-saharan Africa (Figure 44).

Figure 44 - Average cost of a delivery - by facility type and across comparator countries (UGX)



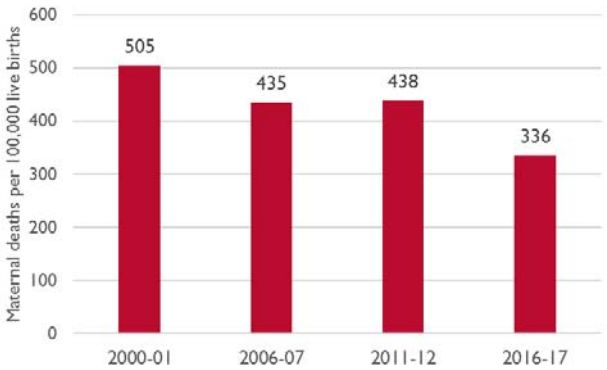
Source: ABCE Survey Report (2014)
Note: All data is for 2011, with the exception of Zambia, which is for 2010

Within Uganda, average costs of birth varies greatly by type of health facility. This difference may be due to a range of issues. For example, hospitals may tend to attract the more complicated births due to their staff and equipment, leading to higher average costs. There may also be lessons that can be learned on more routine deliveries, for example related to the greater reliance on mid-wives in health facilities.

Effectiveness

Recent data show significant reductions in child and maternal mortality rates, pointing to the effectiveness of maternal and child health interventions (Figures 45 and 46). From 2000 through 2017, under 5 (U-5) mortality dropped from 151/1000 live births to 64/1000 live births. Over the same period, child mortality dropped from 88/1000 to 43/1000 live births, and infant mortality declined from 69/1000 to 22/1000 live births. In the meantime, maternal mortality per 100,000 live births

Figure 45 - Maternal deaths per 100,000 live births

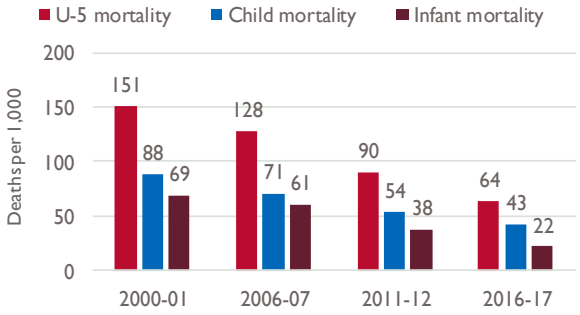


Source: DHS 2000-2016

decreased from 435 in 2006 to 336 in 2016. Maternal mortality ratio (MMR) is still unacceptably high, indicating that more strategic interventions including increased financing for maternal and child health services are required to rapidly lower MMR in Uganda.

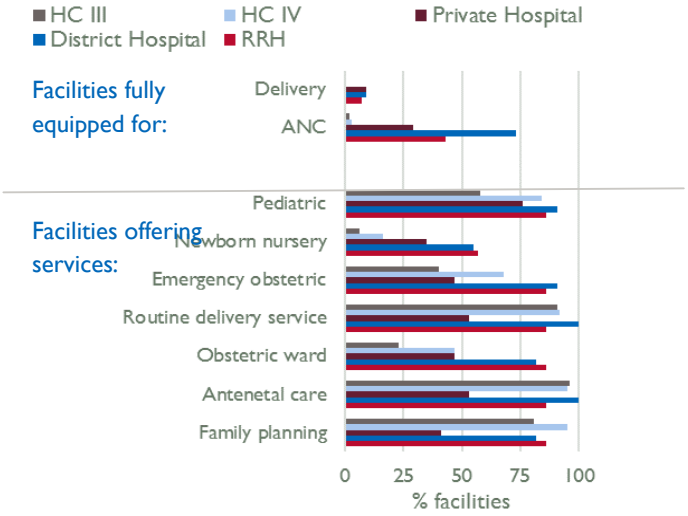
The full impact of maternal and child health interventions may be limited due to a lack of appropriate equipment and materials at the facility level. The 2012 ABCE survey found that only 13 percent of the facilities in the sample reported having the full stock of medications, tests, and medical equipment recommended for the provision of ANC. Less than 5 percent of HCs were fully equipped to provide ANC. For deliveries, less than 10 percent of all facilities were fully equipped for routine deliveries, and many lower level facilities do not offer emergency obstetric services (Figure 47).

Figure 46 – Reductions in child mortality (Deaths per 1,000)



Source: DHS 2000-2016

Figure 47 – Availability of facilities and equipment for maternal and child health services



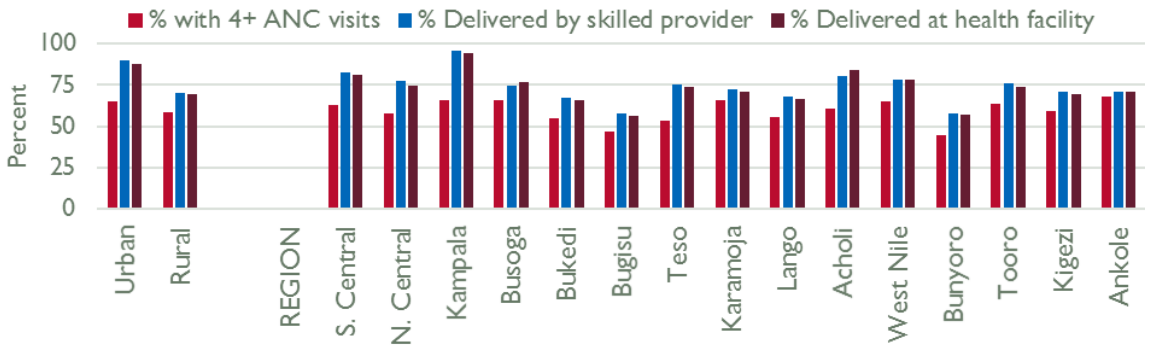
Source: ABCE Survey Report (2014)

Equity

As demonstrated above, maternal health indicators have been improving steadily in Uganda. However, there is unequal distribution in these improvements by location and wealth status. There appear to be differences in use of maternal health services based on location. Rural areas report poorer maternal health service use indicators than urban areas, which could be linked to various dimensions of access to maternal health services including affordability.[46] The gap in access appears to be largest with respect to delivering with a skilled provider and/or at a health facility (Figure 48). Regionally, the Bugisu and Bunyoro regions perform below 60 percent in all maternal health indicators, even though they are not the poorest regions.

[46] The final evaluation of the Figo Saving Mothers and Newborns Project in Uganda found that transportation costs to a health facility represented a significant reason why expectant mothers do not travel to health facilities in rural areas. Source: Nam, Sarah. "Final Evaluation of the Figo Saving Mothers and Newborns Project in Uganda." Options, July 2011 https://www.figo.org/sites/default/files/uploads/project-publications/SMN/Uganda_3.pdf

Figure 48 – Percent of women who had a live birth in the 5 years preceding DHS 2016 survey using maternal health services

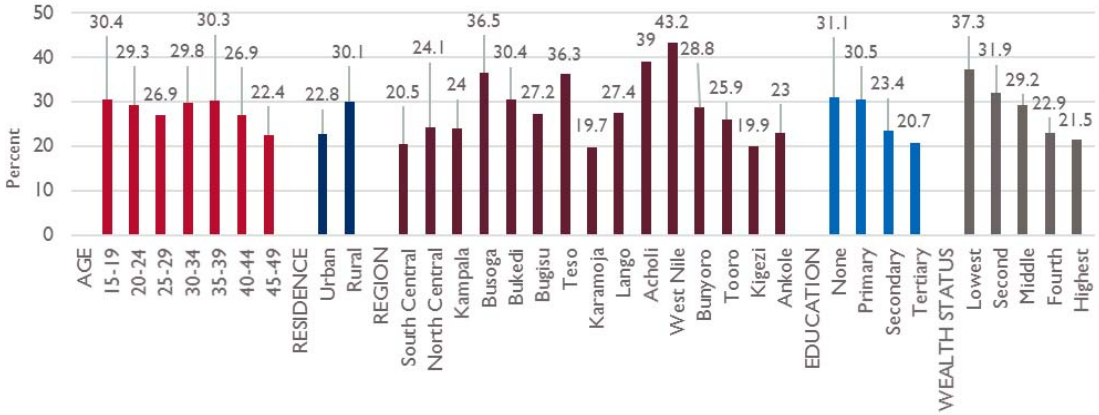


Source: DHS 2015/16

There are also differences in the use of services based on wealth. About 54 percent of women who had a live birth from the poorest quartile attended all four ANC visits compared to 66 percent of women in the highest quartile. Similarly, about 64 percent of women in the poorest quartile had a delivery at a health facility compared to 93 percent for the wealthiest households.

There are also marked differences in unmet family planning needs by all parameters (Figure 49). Unmet family planning needs have implications on maternal health outcomes and child survival. Rural area residents have higher unmet needs than their urban counterparts. Overall, the poorest households reported unmet FP needs at 37 percent compared with about 22 percent in the richest households. This disparity is not evenly felt, however. Karamoja has the lowest unmet needs (about 20%) even though it is one of the poorest region in Uganda, while West Nile (43%) and Busoga (about 37%) have the highest unmet needs.

Figure 49 - Percent of population with unmet family planning needs by category



Source: DHS 2015/16

IMMUNIZATION

Policy Priorities

Initially launched in 1983, the Uganda National Expanded Program on Immunization (UNEPI) is a national program targeting mainly infants, children, and women of childbearing age. The program supports routine immunization services through health facilities, outreach services, periodic

supplemental immunization activities to accelerate control or elimination of certain diseases, surveillance and outbreak response, and introduction of new vaccines. Current efforts are being implemented under the 2016- 2020 Comprehensive EPI Multi Year Plan (cMYP) which aims to sustain gains on DPT immunization, introduce new vaccines, and strengthen microplanning and implementation of the Reach Every District/Reach Every Child (RED/REC) strategy in all districts, as well as improving overall program management of EPI at all levels.[47] It build on the progress made during the 2012-2016 cMYP and the UNEPI revitalization plan (2013-2014).

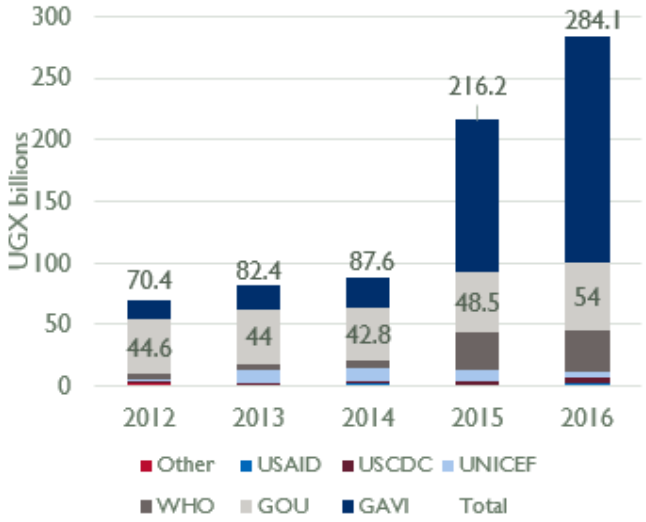
Making progress on improving coverage of existing priority vaccines and introducing new vaccines is a major priority of GOU Leadership. High level political commitment exists for prioritization of both immunization and surveillance, including a parliamentary Task Force for Immunization. In 2016, the Ugandan Parliament passed the Immunization law, which provides for compulsory immunization of children, women of reproductive age and other target groups against vaccine- preventable diseases, taking into account rising pockets of religious objectors. The National Immunization Technical Advisory Group (NITAG), however, has raised concerns that the Immunization Act does not adequately and comprehensively address immunization financing and sustainability for the various new vaccine introductions.

While full immunization coverage has yet to achieve the country's target of 80 percent of target populations, Uganda has made some progress towards reaching the Global Vaccine Action Plan (GVAP) targets. In addition, Uganda has been partnering with GAVI and other development partners to introduce new vaccines, such as the pneumococcal conjugate vaccine (PCV) in 2013-14 and the human papilloma virus (HPV) vaccine in 2015. Going forward, GOU is working to introduce the new rotavirus vaccine, the Yellow Fever vaccine, the MenA vaccine, and the Inactivated Polio Vaccine (IPV).

Financing Trends and Sustainability

The immunization programs have expanded rapidly over the past several years, though much of the expansion is due to donor sources of funding. From 2012 to 2016 total funding for immunizations rose from UGX 70.4 billion to UGX 284.1 billion, an overall increase of 304 percent. This ramp up in immunization spending was due to expansion of existing immunization campaigns and introduction of new vaccines, such as the PCV vaccine in 2013-14 and the HPV vaccine in 2015. GOU funding increased by 21 percent over the period.

Figure 50 – Immunization Financing Trends by Source



Source: GAVI (2016)

Note: GAVI reports on the basis of calendar year rather than fiscal year.

[47] MOH (2016) 2016- 2020 Comprehensive EPI Multi Year Plan. Ministry of Health

Government funding went from representing about 65 percent of funding for immunization in 2012 to about 19 percent of funding in 2016.

The current importance of donor funding for immunization service delivery creates risks related to the sustainability of the program. In years when development partner funding has been lower, GOU funding has not been available to fill the gap. There are also risks associated with numerous skilled staff being paid by donor-funded projects, notably at the Uganda Virus Research Institute (UVRI). As support for these projects wind down, GOU will need to identify the requisite resources to maintain these staff on the payroll to ensure the quality of vaccine-preventable disease (VPD) surveillance remains high.[48]

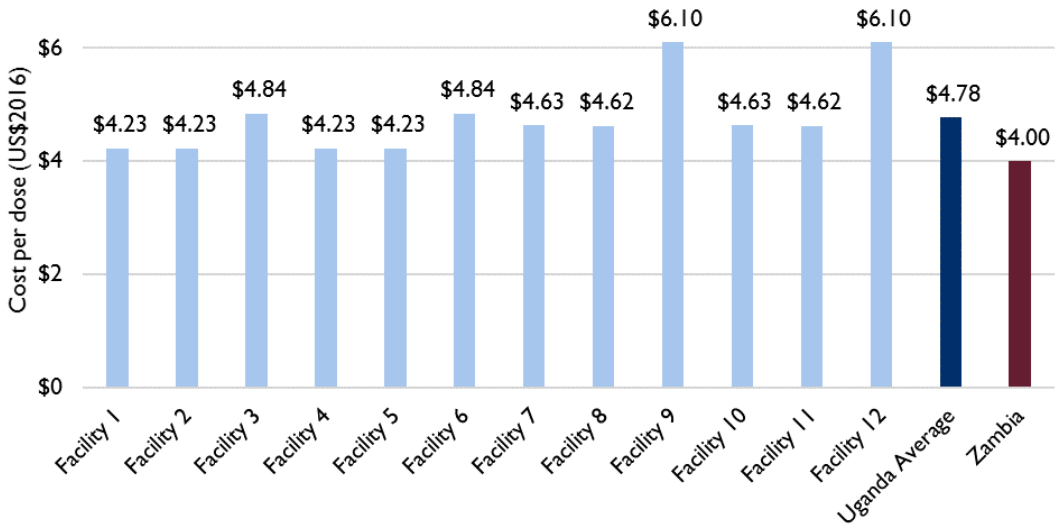
The new Immunization Act, passed in 2016, recognizes this risk and includes provisions to encourage the sustainability of immunization programs. The new law mandates compulsory immunization and establishes a new national immunization fund. The WHO, through the Partners' Engagement Framework, worked with the government to undertake an immunization financial sustainability plan. Some of the measures identified in the 2016-2020 MYP to improve the sustainability of immunization financing include: (1) ring-fencing of UNEPI co-financing funds; (2) ring-fencing of immunization funds more generally; (3) advocating for greater resources from MOFPED and MOH for immunization activities; (4) increasing resources provided by LGs, among others.[49] Implementing these items, along with funding of the National Immunization Fund, would greatly improve the sustainability of Uganda's immunization program.

Efficiency

Information gathered to assess the costs of the introduction of the Pneumococcal Conjugate Vaccine (PCV 10) provide some insights on the cost efficiency of immunization delivery in Uganda. PCV 10 was introduced in Uganda in 2013-14, with a pilot in 2013 followed by gradual rollout across 3 waves in 2014. While the costs of introduction of a new vaccine are different from expansion of an existing immunization program, it can provide some insights into the service delivery costs associated with the immunization system. Results from a detailed costing study found that while most of the surveyed health facilities had costs per dose between $4.23 and $4.84, two of the ten facilities studied had costs exceed $6 per dose (Figure 51). Also according to data from the Immunization Delivery Cost Catalogue maintained by the Immunization Costing Action Network (ICAN)[50], Uganda's cost per dose during the implementation of this vaccine was about 19.5 percent higher than that of Zambia, though some of this difference may be due to differences in the costing techniques.[51] These results point to the need to identify lessons learned from more efficient facilities as immunization activities are increasingly scaled up.

[48] MOH (2016) 2016- 2020 Comprehensive EPI Multi Year Plan. Ministry of Health
[49] *ibid*
[50] An organization affiliated with the Harvard School of Public Health
[51] Immunization Costing Action Network (ICAN). 2018. *Immunization Delivery Cost Catalogue*. Washington: ThinkWell. April 2018

Figure 51 – Cost per dose of PCV10 in Uganda across facilities and in Zambia (US$ 2016)



Source: ICAN, April 2018

Effectiveness

While vaccine coverage of all basic vaccinations expanded between 2011 and 2016, coverage is still below 60 percent (Table 14). The coverage of all-age appropriate vaccinations is significantly lower, at about 36 percent across the whole DHS sample. These low levels of coverage are likely to have a negative influence or slow progress on child survival.

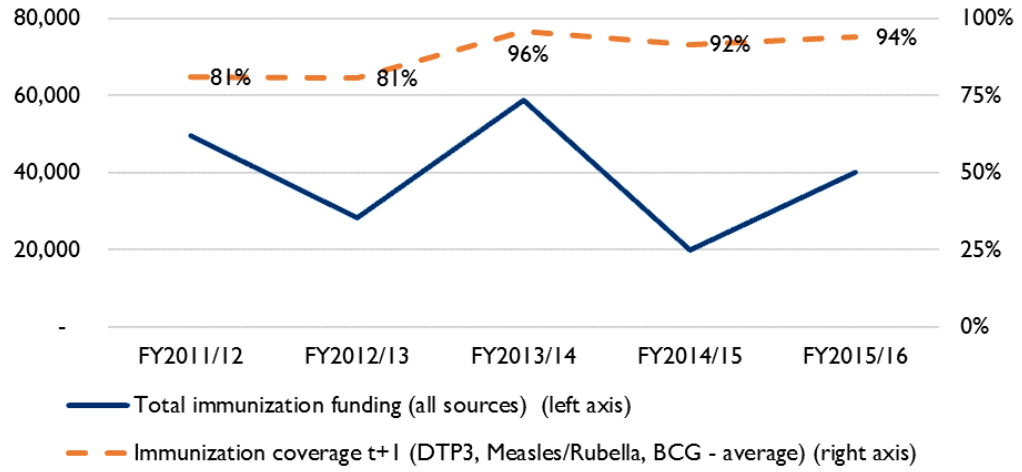
Table 14 – Vaccine Coverage, 2011 DHS vs. 2016 DHS

	2011 DHS	2016 DHS
All age appropriate vaccinations	-	35.8
All basic vaccinations	51.6	55.2
No vaccinations	3.7	1.3

Source: DHS 2011 and 2016

Expansion of vaccine coverage has a clear relationship with funding levels. The increase in funding in 2013/14 had a clear impact on increased immunization coverage in the following year and the dip in funding in FY2014/15 appears to have yielded a lower average coverage rate the following year. This indicates that overall spending appears to be well targeted.

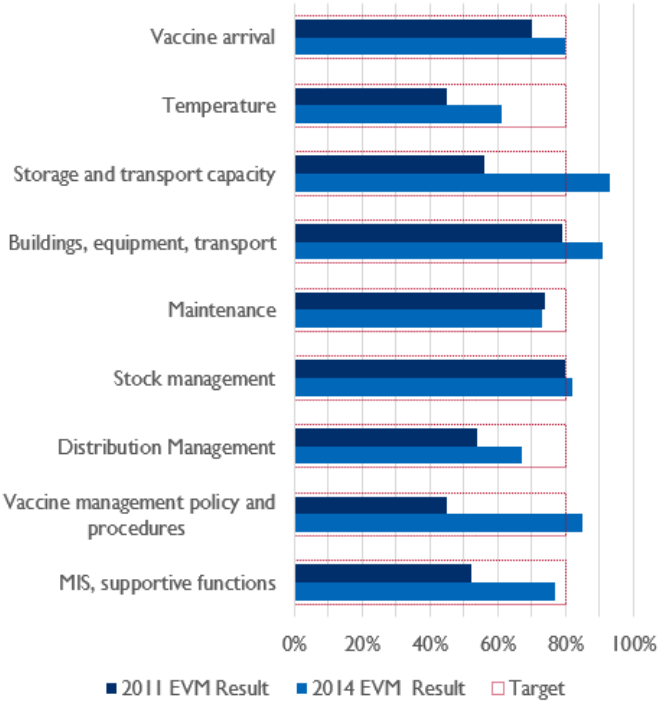
Figure 52 – Trends in Immunization spending and vaccine coverage (year t+1)



Source: NHA 2011/12. 2013/14, 2015/16; WHO (Country reported immunization data)

The effectiveness of Uganda's vaccine program, may be somewhat limited by its logistics and delivery system, as shown by its scores on some of the Effective Vaccine Management (EVM) indicators, EVM indicators provide globally comparable standards of vaccine supply chain performance. The nine indicator areas cover: (1) vaccine arrival; (2) storage temperature; (3) storage capacity; (4) buildings, equipment, and transport; (5) maintenance; (6) stock management; (7) distribution; (8) vaccine management; and (9) information systems and supportive functions. These indicators are assessed at three levels of health system: the central level (NMS and central vaccine stores (CVS)), district vaccine stores, and health facilities. Uganda conducted its first EVM assessment in 2011, and a follow-up assessment in 2014.

Figure 53 – Uganda's overall scores on the Effective Vaccine Management (EVM) indicators, 2011 and 2014



Source: Uganda EVMA Report (2014)

Between the two assessments, Uganda improved in a few areas, notably on maintenance of appropriate temperatures and improvements for all of the indicators for the central level agencies. At the central level, Uganda met or exceeded the targets for the indicators on storage capacity (E3), building, equipment and

transport (E4), stock management (E6), and vaccine management (E8). These improvements were due to significant investments in the cold chain, transfer of the vaccine logistics function to NMS in 2012 to leverage its existing infrastructure and expertise, and improved coordination of UNEPI, NMS, NVS, and development partners on immunization forecasting, planning, monitoring, and logistics through a vaccines management committee.[52]

These improvements did not take hold throughout the immunization system, however. In the 2014 assessment, Uganda received overall lower scores for four of the assessed areas, notably vaccine management, stock management, maintenance, and storage capacity. Within each of these areas, ratings showed improvements at the national level, but poorer performance at the district and health facility levels. This result indicates the need to direct more resources toward local level management systems.

As the strong performance on the indicator for temperature and building, equipment and transport indicate, most facilities offering routine immunization services have adequate storage facilities, and functioning refrigerators are available in most districts and 88 percent of health facilities visited by MOH staff.[53] Staffing and arrangements for regular maintenance of these facilities remains more of a challenges. Recent MOH UNEPI supervision missions found that only 39 percent of Districts visited had Cold Chain Technicians, and none of the districts visited were carrying out cold chain inventories or maintenance schedules.

Data management issues have been particularly problematic, making planning and forecasting a challenge. The reliability of vaccination rates were brought into question in a 2016 GAVI audit. These issues stem back to the district and facilities levels, where there is a lack of regular verification of utilization data and inconsistent usage of data collection tools for vaccine use and wastage, such as Vaccines and Injection Materials Control Books (VIMCB).[54] These data management issues may complicate efforts to budget the resources required to achieve the goals set out in the new immunization law.

There also appear to have been some issues related to the availability of vaccines over the period. Surveillance conducted by MOH in preparation of the 2016-2020 EPI Plan found that 96 percent of districts, and 71 percent of health facilities had experienced vaccine stock outs in the 3 months preceding this review. The vaccines most affected by stock outs were PCV (45%) and BCG (38%). These stock outs appear to have been forecasting and supply issues from either the district or national levels. This may be due, in part to unreliable estimates of target populations at lower levels that may have led to poor distribution of supplies.

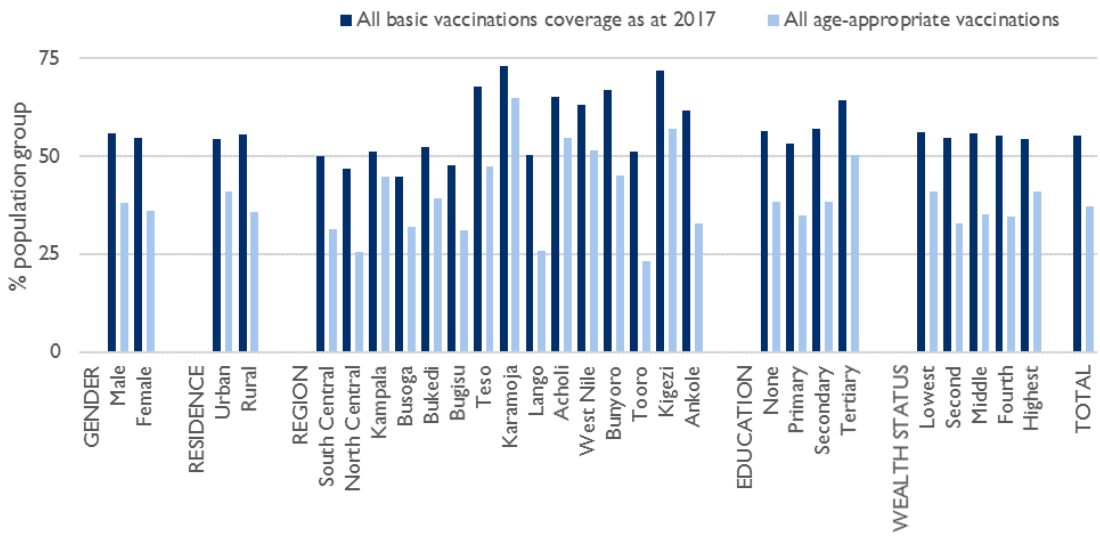
Equity

There are some disparities in vaccine coverage with respect to region, but difference by wealth, urban/rural, and gender are very small. The best performing regions in terms of overall vaccine coverage is Karamoja, which is one of the poorest regions in Uganda, which indicates that poverty and vaccine coverage are not linked. This is true because vaccine coverage among wealth quintiles shows no tangible differences; in fact, coverage is highest in the poorest quintile for basic (56%) and

[52] Musubire, William (2015). "Uganda – Lessons Learned from Improving Vaccine Management Using EVM Approach" Presentation at the 14th TechNet Conference, Bangkok Thailand, 11 – 15 May 2015. Available: http://www.technet-21.org/images/TC2015/08_Country_Innovations_Uganda_William_Musubire.pdf
[53] MOH (2016) 2016- 2020 Comprehensive EPI Multi Year Plan. Ministry of Health.
[54] MOH (2016) 2016- 2020 Comprehensive EPI Multi Year Plan. Ministry of Health.

all-age appropriate vaccinations (41%) and lowest in the wealthiest quintile (54% and 40.9%) respectively (Figure 54).

Figure 54 - Vaccine coverage by gender, location, education and wealth quintile (percent)



Source: DHS 2015/16

NON-COMMUNICABLE DISEASES

Policy Priorities

Uganda is facing a significant rise in NCDs resulting from a combination of several factors including urbanization, adoption of unhealthy lifestyles, increasing aging population, and metabolic side effects of lifelong antiretroviral treatment. As of 2003, diabetes affected about 50,000 Ugandans; this number is expected to grow 10-fold by 2025 if no interventions are initiated.[55,] The Uganda Bureau of Statistics (UBOS) survey in 2016/17 indicated that being female, living in a urban area, and being over age 40, elevate the risk factors for diabetes, high blood pressure and heart disease (Table 16).[56] In the survey, high blood pressure and heart diseases are more common among females (5.0 and 2.9 percent) than males (1.9 and 1.3 percent), respectively. The WHO classifies cardiovascular diseases, cancers, chronic respiratory diseases and diabetes as the priority NCDs on which national policy priorities should focus.

GOU's strategic priority is to prevent and control NCDs and their risk factors using a multi-sectoral approach. As part of efforts to achieve this objective, the GOU in 2017, signed a Memorandum of Understanding with Novartis Access, to increase patients' access to treatment for key NCDs: cardiovascular disease, cancer, diabetes and chronic respiratory disease. Novartis Access provides treatments to government at a cost of $1 USD per treatment per month supplied through the National Medical Stores and Joint Medical Stores.[57] Although the WHO (2014) country profiles reported negligible national systems response to NCDs in Uganda, the MoH has so far established

[55] The Uganda NCD Alliance Strategic Plan 2016-2019 Kampala, June 2016. Available: https://ncdalliance.org/sites/default/files/Sample%206-UNCDA%20Draft%20Strategic%20plan%202016%20-%202019.pdf
[56] UBOS, 2009 Uganda National Household Survey Report 2016/17
[57] MOH 2017. Government to increase access to non- communicable disease medicines. Available: health.go.ug/download/file/fid/145

an NCD program to coordinate all NCD responses including a commitment to increase funding (see Table 17).[58] [59]

Table 15 - Distribution of population aged 10 years and above with Non-Communicable Diseases by Respondent Characteristics (%)

Respondent Characteristics	Non-Communicable Diseases			
	Diabetes	High blood pressure	Heart disease	None
Residence				
Urban	1.3	4.2	1.5	94.0
Rural	0.7	3.3	3.6	94.4
Sex				
Male	0.8	1.9	1.3	96.5
Female	1.0	5.0	2.9	92.3
Age category				
10-24	0.1	0.3	0.7	99.0
25-39	0.4	2.4	2.4	95.1
40-59	2.5	8.3	3.4	87.7
60+	4.6	18.8	7.7	74.4
Uganda (2016/17)	**0.9**	**3.5**	**2.1**	**94.3**
Uganda (2012/13)	**0.4**	**3.2**	**2.0**	**94.4**

Source: *UBOS, 2016/17*

Financing Trends and Sustainability

Funding for NCDs has increased in recent years from about UGX 220 billion in FY 12/13 to about UGX 621 billion in FY 15/16. Overall, GOU dedicates about 25.7 percent of government resources toward NCDs. The allocation of these funds, however seems to be focused on oral diseases rather than those that impose a greater impact in terms of loss of life. According to NHA data, financing of oral diseases represented 18.9 percent of GOU spending overall in 2015/16, and more than two-thirds of spending on NCDs (Table 16). By comparison, oral diseases represented only about 0.2 percent of disability adjusted life years (DALYs) lost over the period, and 0.9 percent of those associated with NCDs.[60]

[58] Country profiles- Uganda (2014). Available: http://www.who.int/nmh/countries/uga_en.pdf?ua=1
[59] MOH 2017. Government to increase access to non- communicable disease medicines. Available: health.go.ug/download/file/fid/145
[60] Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017. Available from http://ghdx.healthdata.org/gbd-results-tool.

Table 16 - Government financing for NCDs (UGX millions and percent of spending on NCDs)

	FY 12/13	FY 13/14	FY 14/15	FY 15/16	Average	
	Amount (UGX Millions)				*UGX Mils*	*%*
NCD Funding by Source						
Public	189,771	198,783	204,350	240,565	208,367	52%
Private	22,389	22,817	324,182	355,197	181,146	45%
Development Partners	8,005	11,885	12,000	25,098	14,247	4%
Total	**220,165**	**233,485**	**540,533**	**620,860**	**403,761**	**100%**
Public NCD Spending by Disease type						
Neoplasms	33,924	35,984	35,350	40,059	36,329	17%
Endocrine & metabolic disorders	2,208	2,343	2,310	2,603	2,366	1%
Cardiovascular diseases	10,995	12,478	11,847	13,661	12,245	6%
Mental health	11,926	9,650	12,888	23,592	14,514	7%
Digestive diseases				3	3	0%
Sense organ disorders	75	-			38	0%
Oral diseases	130,644	138,328	138,620	153,647	140,310	67%
Other NCDs			3,334	6,999	5,167	2%
Total NCDs	**189,771**	**198,783**	**204,350**	**240,565**	**210,972**	**100%**

Source: NHA 2014/15; 2015/16

Efficiency

In terms of allocative efficiency, there is very little concordance between the priority NCDs (CVDs, cancer, diabetes and chronic respiratory illness) and government funding. As shown in Table 17, most government funding for NCDs go to oral diseases. Oral health, in fact, represents an outsized portion of GOU health spending overall, making up 18.9 percent of spending in FY 15/16. When priority NCDs such as CVD received only 2.9 percent funding. This implies that financing for NCDs is largely out-of-pocket because donors have almost negligible input in NCD financing. However, there is also the possibility of inadequate data capture.

There is also a wide range of costs for service delivery of NCD services across different health facilities. A 2015 study found that the cost per visit of a visit related to diabetes ranged from US$1.44 to US$11.76 among HC III facilities in their sample, and were about US$3.63 and US$2.20, respectively at HC IVs and Hospitals. This indicates both the variety of services that health facilities offer (some visits may be less expenses because there are not adequate supplies and laboratory equipment), as well as the potential to adopt cost savings mechanisms to promote better use of scarce resources.

Table 17 - Unit costs for delivery of select NCD services

	Hospital (*n* = 1)	HC IV (*n* = 1)	HC III (*n* = 7)		HC II (*n* = 3)	
	Unit cost per visit	Unit cost per visit	Unit cost per visit		Unit cost per visit	
			Mean	Range	Mean	Range
COPD/Asthma	**1.66**	**2.04**	**2.36**	**1.49–3.70**	**2.1**	**1.47–2.77**
Salaries	0.67	1.05	1.31	0.74–2.43	1.17	0.71–1.95
Drugs	0.04	0.08	0.61	0.27–1.34	0.44	0.02–0.69
Capital	0.86	0.87	0.37	0.19–0.77	0.43	0.15–0.68
Other	0.09	0.04	0.06	0.02–0.17	0.06	0.003–0.11
Diabetes	**2.2**	**3.63**	**6.55**	**1.44–11.76**	**N/P**	
Salaries	1.18	1.4	3.34	0.99–7.15	N/P	
Drugs	0.11	0.52	1.2	0.37–3.24	N/P	
Capital	0.8	1.65	1.85	0.43–3.94	N/P	
Other	0.11	0.05	0.07	0.02–0.3	N/P	
Epilepsy	**4.9**	**1.79**	**6.91**	**2.33–20.75**	**N/P**	
Salaries	0.8	0.54	3.82	0.74–9.90	N/P	
Drugs	2.06	0.38	1.17	0.33–1.75	N/P	
Capital	1.87	0.84	1.73	0.25–8.32	N/P	
Other	0.17	0.04	0.16	0.02–0.79	N/P	
Hypertension	**4.65**	**2.98**	**3.5**	**1.59–6.59**	**3.29**	**2.69–3.89**
Salaries	0.67	1.05	1.32	0.74–2.47	1.4	0.84–1.95
Drugs	2.49	1.02	0.48	0.99–1.27	0.38	0.32–0.44
Capital	1.37	0.87	1.64	0.50–5.46	1.43	1.35–1.51
Other	0.12	0.04	0.06	0.07–0.11	0.06	0.02–0.17

Source: Settumba et al. (2015)[61]
Note: N/P indicates that a service not provided at this level of health facility.

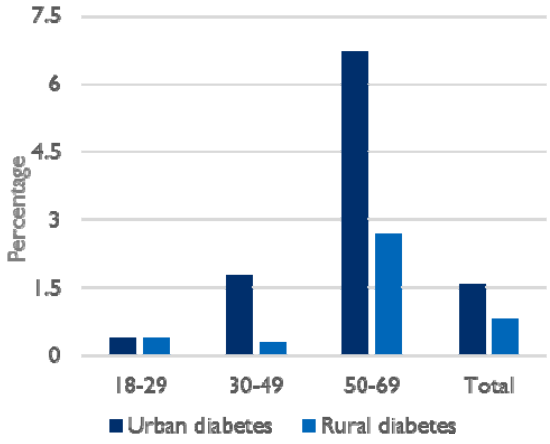
Effectiveness

One in every four adults in Uganda suffers from an NCD, a fact that is complicated by low screening rates and exposure to multiple risk factors. For example, screening for cancer of the cervix, the leading cause of cancer death in Uganda, was only 10 percent among women aged 30-49 years. About 10 percent of Ugandans aged 18-69 years have at least three risk factors for NCDs with 20 percent aged 45-69 years having more than three risk factors.[62] As demonstrated in Figure 55, the latter age-group (49-69) have the heaviest burden of diabetes, which seems to affect more urban residents than rural. It requires that any interventions to reduce NCD burden should start as early in life as possible and with emphasis in urban areas where, as the figure shows, 6.7 percent of the population aged 50-59 years is at risk of diabetes compared to 2.7 percent in rural residence.

The increasing burden of NCDs in Uganda is evident. The disability adjusted life years (DALYs) of some NCDs such as asthma, diabetes and epilepsy, experienced increases of between 28 and 50 percent over the past decade (Figure 55).

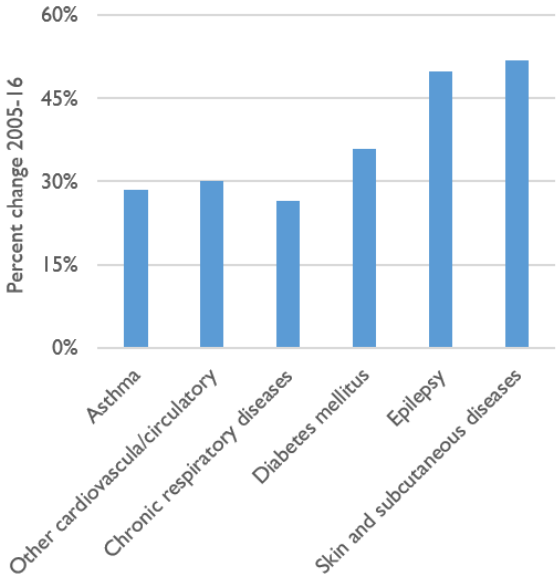
[61] Settumba et al. The health system burden of chronic disease care: an estimation of provider costs of selected chronic diseases in Uganda, Tropical Medicine and International Health, Volume20, Issue6, Pages 781-790, June 2015. Available: https://onlinelibrary.wiley.com/doi/full/10.1111/tmi.12487
[62]Institute for Health Metrics and Evaluation (IHME). Health Service Provision in Uganda: Assessing Facility Capacity, Costs of Care, and Patient Perspectives. Seattle, WA: IHME, 2014.

Figure 55 – Percentage of individuals with raised blood glucose



Source: IHME, 2014

Figure 56 – Percent Increase in Select NCDs[63]



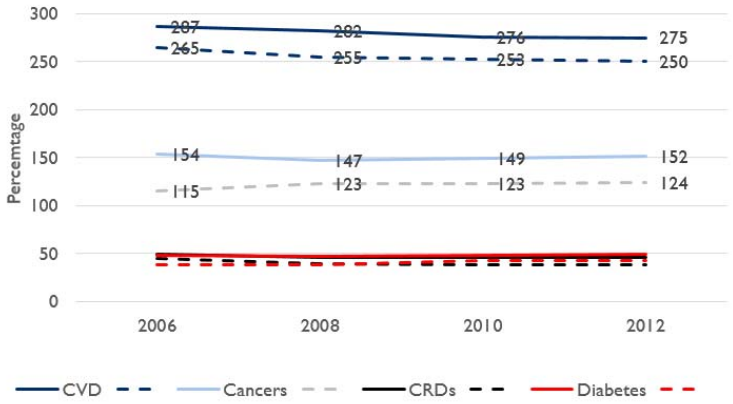
Source: IHME, 2016

There is currently no study in Uganda that has evaluated effectiveness of interventions against NCDs. However, the burden of NCDs has been on the rise in Uganda, indicating a lack of sustained interventions to halt and reverse NCDs. This situation is common across Sub-Saharan African countries and many other low- and middle-income countries (LMIC) which are yet to arrest communicable diseases such as malaria and HIV/AIDS but now faced with NCDs.

With regard to NCD-related mortality, the results are mixed. A report by the WHO[64] (Figure 57) indicates that deaths from NCDs overall are heaviest on males. Deaths from cardiovascular disease (CVD) and chronic respiratory disease (CRD) have been slightly on the decline from about 287 deaths per 100,000 in 2006 to about 275/100,000 in 2012 among men and from about 265/100,000 to 253/100,000 among women. On the other hand, deaths from cancer and diabetes were on the rise between 2006 and 2012. It is not clear what interventions are in place for each of these types of NCDs.

[63] NCDs were selected at the 3rd level of disaggregation of the Global Burden of Disease study and were chosen for inclusion if the represented more than 0.5% of DALYs and had a percent increase greater than 25%
[64]Country profiles- Uganda (2014). Available: http://www.who.int/nmh/countries/uga_en.pdf?ua=1

Figure 57 - Age standardized death rates (per 100,000)



NB/ Broken lines= Female & Solid Lines=Male
CVD= Cardiovascular disease; CRD= Chronic respiratory disease

Source: WHO 2014

Much of illness outcomes as a measure of effectiveness of interventions hinge on health worker skills related to their ability to diagnose and treat NCDs. A study by Schwartz et al.[65] indicates that in Uganda an average of 58 percent of nurses, 59 percent of clinical officers and about 45 percent of medical officers are not confident enough to manage any kind of NCD (Table 19).

From the table, the majority of health workers including 40 percent of physicians are least confident in managing cervical cancer, which is also the leading cause of cancer-related mortality in Uganda. Most health workers are however, confident of managing hypertension and asthma.

Table 18 – Confidence to provide NCD services by cadre of health care workers

	Nurses (n=32)		Clinical Officer (n=16)		Medical Officer (n=19)		Physician (n=10)	
	Yes (%)	*No (%)*	*Yes (%)*	*No (%)*	*Yes (%)*	*No (%)*	*Yes (%)*	*No (%)*
Hypertension treatment	44	56	75	25	100	0	100	0
Diabetes treatment	44	56	44	56	90	10	100	0
Asthma treatment	66	34	88	12	95	5	100	0
Cervical cancer screening	22	78	0	100	42	58	60	40
Depression screening/treatment	31	69	38	62	53	47	-	
Tobacco abuse treatment	34	66	19	81	21	79	-	
Alcohol abuse treatment	53	47	25	75	32	68	-	

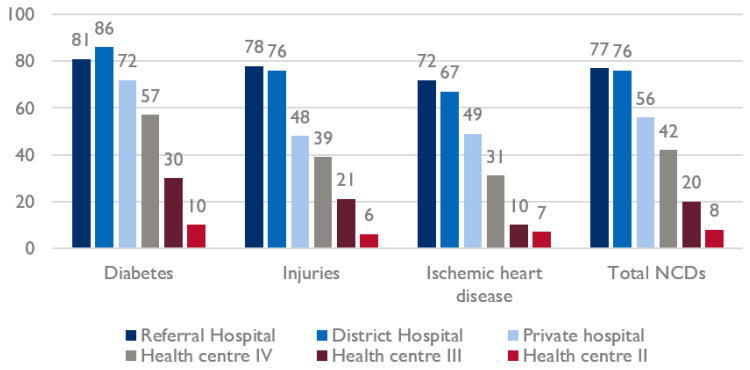
Source: Schwartz et al. 2014

[65] Schwartz et al. 2014, Looking at non-communicable diseases in Uganda through a local lens: an analysis using locally derived data. *Globalization and Health* 10:77. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4240853/pdf/12992_2014_Article_77.pdf

Equity

Uganda has very little capacity to deal with the rising cases of NCDs.[66] In line with the current burden of disease, health facilities have higher capacity to deal with infectious diseases but lack the sophisticated equipment and medications to optimally diagnose and treat NCDs. As shown in Figure 58, the lack of preparedness to address NCDs is most felt in the lowest level health facilities that serve low income and largely rural communities. This also indicates levels of inequity in access to NCD services between rural and urban areas and between the rich and poor. Regional referral, general and private hospitals tend to be more concentrated in urban areas where wealthier populations live.[67]

Figure 58 – Facility capacity to provide disease specific services



Source: ABCE Survey Report (2014)

HCs provide preventive services and being ill-prepared to provide such services for NCDs means that Uganda is spending a lot more resources on curative care when the more cost-effective preventive care is essentially not funded. Primary prevention of key NCDs is far less expensive and has lower unit costs than treatment of those conditions.[68] For instance, less than 30 percent of HCs had the capacity to test blood sugar levels, suggesting that primary care facilities are least equipped to address the rising burden of diabetes. As shown in the figure above, service provision gap for NCDs widened between different levels of care; e.g. referral hospitals have nearly 80 percent capacity to deal with diabetes, injuries, ischemic heart disease and other NCDs compared to mostly less than 10 percent in HC II. Murray et al[69] noted that primary care facilities lacked more than half of the recommended medical equipment and medications for ischemic heart disease.

[66] Murray CJL, et al., on behalf of the Global Burden Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010. The Lancet. 2012; 380(9859): 2197–2223
[67] Weisgrau, S. Issues in Rural Health: Access, Hospitals, and Reform. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4193574/pdf/hcfr-17-1-1.pdf
[68] Schwartz et al. 2014, Looking at non-communicable diseases in Uganda through a local lens: an analysis using locally derived data. *Globalization and Health* 10:77. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4240853/pdf/12992_2014_Article_77.pdf
[69] Murray CJL, et al. on behalf of the Global Burden Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet. 2012; 380(9859): 2197–2223

SUMMARY AND AREAS FOR FURTHER POLICY DIALOGUE

Uganda has made remarkable progress over the past decade on improving health outcome and increasing the reach of its public health programming. Among the more remarkable achievements are:

- Reduction in annual HIV/AIDS related deaths from about 76,000 in 2006 to 28,000 in 2016.[70]
- Decrease in infant mortality from 76 to 43 per 1,000 live births between 2006 and 2016, and reduction in maternal mortality from 435 in 2006 to 336 per 100,000 in 2016.
- Introduction of several new life saving vaccines, including the pneumococcal conjugate vaccine (PCV) in 2013-14 and the human papilloma virus (HPV) vaccine in 2015.

Looking toward the future, to ensure the sustainability of these gains, GOU will need to identify opportunities to mobilize additional domestic resources to support health service delivery. This transition may take a number of years, with domestic funding gradually increasing. More broadly, the health sector will need to find opportunities to use existing resources more efficiently, and to fully implement their approved budgets. This will require the implementation of a range of measures – some of which support the whole sector, and others that are specific to certain service delivery areas.

The following represent some of the major findings of the PER, including areas that will promote more efficient and equitable use of government resources.

CROSS-CUTTING AND SECTOR GOVERNANCE

- Improve the sustainability of health financing by increasing GOU funding to the health sector consistent with international standards and the levels funded by regional comparator countries.
- Better account for inflation and exchange rate fluctuations in planning sector resources, including with respect to multi-year capital projects.
- Improve the design of MOH programme structure to better align with major service delivery areas, such maternal and child health, and HIV/AIDs or malaria prevention and treatment, and strengthen KPIs to more directly inform management decision making.[71]
- Develop a comprehensive database for capital expenditure projects to better budget for co-financing of multi-year donor funded projects and to better account for recurrent costs of capital projects.

[70] UNAIDS http://www.unaids.org/en/regionscountries/countries/uganda

[71] USAID SPEHB is providing some technical assistance on this topic. The current programme structure is mandated by MOFPED and there is a limitation in changing this until the new financial year starts. MOH has also recently agreed with MOPS on a new organizational structure which calls for a new programme structure that can only be implemented in FY 2019/20 Budget.

- Consider re-aligning the weighting of criteria for distribution of non-wage recurrent PHC grants to better account for geographic and demographic challenges of districts not accounted for within the population related criteria.[72]

- Work with MOFPED to continue to ensure timely release of funds, and with MOH and districts to ensure timely transfer of funds to institutions and facilities receiving grants or transfers under their purview

- Review and streamline internal control processes and conduct risk assessment to minimize pre-payment audit and expedite payment of low risk transactions, such as those falling under a certain threshold value.

- Implement measure to more proactively initiate recruitments, and continue to review compensation for health sector workers to expedite recruitment and improve retention.

- Institutionalize the National Health Accounts and expand efforts to use the data to reinforce analysis of the effectiveness of health programs and expenditure, such as through the implementation of annual Public Expenditure Reviews.

SERVICE DELIVERY

HIV/AIDS and Tuberculosis

- GOU spending on HIV/AIDS and TB appears to have been crowded out by increased donor spending. GOU should continue its efforts to increase domestic resources for HIV/AIDS to avoid losing the significant gains in reducing HIV/AIDS prevalence and mortality, including through the funding of the HIV/AIDS trust fund.

- Continue exploring options to increase the efficiency of HIV/AIDS service delivery, such as promoting bulk purchasing of ARVs on the international market to lower unit costs, identify options to contain the costs of laboratory services, and explore innovative service delivery models that efficiently use the time of health care professionals.

Malaria

- Reinforce domestic funding for malaria activities, both by increasing the level of GOU funding and by allocating more of the GOU resources directly toward treatment and prevention activities.

- Increase funding at the service delivery level available for the purchase of equipment and supplies to provide malaria health services, particularly for HC III and below which are the front lines for malaria prevention and treatment services.

- Support initiatives to reduce the unit costs of malaria medicines and treatments, particularly for ACTs, in both public and private facilities and promote more targeted use of anti-malarials to improve the efficiency of treatments.

[72] While the FY2018/19 criteria for distribution of non-wage recurrent PHC grants notes the need to consider the geographic conditions of more remote areas of the country, it does not adjust the weighting provided to far to reach areas from previous years.

Maternal and Child Health

- Consolidate gains in reducing maternal and child mortality by maintaining or increasing GOU funding, and expanding the use of cost-efficient service delivery options – such as the use of mid-wives for routine delivery.

- Increase investment to ensure all health facilities have adequate equipment for at least routine deliveries.

- Identify root causes of regional differences in uptake of maternal health services and address them appropriately.

Immunization

- Implement the recommendations of the Immunization Program Financial Sustainability Plan, including increasing the share of funding for immunization from domestic sources.

- Continue the use of pooled procurement mechanisms for vaccines to achieve economies of scale in procurement.

- Identify and roll-out good practice by health facilities demonstrating a lower cost per dose of delivering vaccines, while maintaining delivery models that are appropriate to the demographic group being targeted.

- Where efficient, implement strategies to reduce vaccine wastage, for example by optimizing the vial sizes based on the vaccines administered and the distribution method (e.g., to fit both smaller vaccine session sizes and mass vaccination campaigns).

NCDs

- Re-align GOU funds toward NCDs with a large disease burden on the population.

- Identify options to incentivize LGs to make needed investments in equipment and supplies needed to identify and monitor NCDs at the HC III and HC IV levels and to provide training to medical staff to deal with high burden NCDs.

ANNEX 1: SUMMARY DATA

Government of Uganda Health Spending by Disease Type, According to National Health Account Classifications, FY2012/13 – FY2015/16

		FY2012/2013	FY2013/2014	FY2014/2015	FY2015/2016
		Amount (UGX Millions)			
	Infectious and parasitic diseases	**373,009**	**401,623**	**275,589**	**300,881**
DIS.1.1	HIV/AIDS and Other STDs	215,213	217,177	126,950	150,104
DIS.1.2	Tuberculosis (TB)	32,055	41,855	4,623	5,126
DIS.1.3	Malaria	92,482	94,466	102,900	97,356
DIS.1.4	Respiratory infections	7,161	7,642	7,561	25,990
DIS.1.5	Diarrheal diseases	3,396	3,594	23,902	11,722
DIS.1.6	Neglected tropical diseases	3	3	39	43
DIS.1.7	Vaccine preventable diseases	3,640	11,760	2,683	2,837
DIS.1.nec	Other and unspecified infectious and parasitic diseases (n.e.c.)	19,058	25,125	6,931	7,703
	Reproductive health	**120,893**	**129,770**	**111,393**	**164,931**
DIS.2.1	Maternal conditions	64,507	70,621	63,152	94,141
DIS.2.2	Perinatal conditions	23,946	25,406	25,523	45,612
DIS.2.3	Contraceptive management (family planning)	15,667	16,072	6,931	7,682
DIS.2.nec	Unspecified reproductive health conditions (n.e.c.)	16,773	17,671	15,787	17,496
	Nutritional deficiencies	**1,611**	**21,176**	**1,619**	**14,323**
	Non-communicable diseases	**189,771**	**198,783**	**204,350**	**240,565**
DIS.4.1	Neoplasms	33,924	35,984	35,350	40,059
DIS.4.2	Endocrine and metabolic disorders	2,208	2,343	2,310	2,603
DIS.4.3	Cardiovascular diseases	10,995	12,478	11,847	13,661
DIS.4.4	Mental health	11,926	9,650	12,888	23,592
DIS.4.6	Digestive diseases				3
DIS.4.8	Sense organ disorders	75	-		
DIS.4.9	Oral diseases	130,644	138,328	138,620	153,647
DIS.4.nec	Other NCDs			3,334	6,999
	Injuries	**22,526**	**25,541**	**69,397**	**37,567**
	Non-disease specific	**53,990**	**54,523**	**3,095**	**3,523**
	Other and unspecified diseases/conditions (n.e.c.)	**53,092**	**47,350**	**73,598**	**51,297**
		814,893	**878,766**	**739,041**	**813,087**

Uganda Private Sector Health Spending (including Households) by Disease Type, According to National Health Account Classifications, FY2012/13 – FY2015/16

		FY2012/2013	FY2013/2014	FY2014/2015	FY2015/2016
		Amount (UGX Millions)			
	Infectious and parasitic diseases	**1,079,553**	**1,025,284**	**1,021,998**	**1,117,176**
DIS.1.1	HIV/AIDS and Other STDs	151,561	151,967	140,566	153,902
DIS.1.2	Tuberculosis (TB)	0	0	0	4
DIS.1.3	Malaria	685,631	644,007	648,013	709,527
DIS.1.4	Respiratory infections	187,763	177,156	176,901	193,014
DIS.1.5	Diarrheal diseases	54,184	50,335	55,680	60,060
DIS.1.6	Neglected tropical diseases	0	0	0	0
DIS.1.7	Vaccine preventable diseases	316	503	837	662
DIS.1.nec	Other and unspecified infectious and parasitic diseases (n.e.c.)	99	1,317	0	7
	Reproductive health	**443,219**	**417,953**	**416,927**	**455,303**
DIS.2.1	Maternal conditions	258,145	243,727	243,626	265,676
DIS.2.2	Perinatal conditions	185,067	174,215	173,301	189,606
DIS.2.3	Contraceptive management (family planning)	6	8	0	7
DIS.2.nec	Unspecified reproductive health conditions (n.e.c.)	1	2	0	15
	Nutritional deficiencies	**133,660**	**125,822**	**125,162**	**136,921**
	Non-communicable diseases	**22,389**	**22,817**	**324,182**	**355,197**
DIS.4.1	Neoplasms	0	0	0	33
DIS.4.2	Endocrine and metabolic disorders	0	0	0	2
DIS.4.3	Cardiovascular diseases	8	0	0	10
DIS.4.4	Mental health	20,563	19,357	19,253	21,071
DIS.4.6	Digestive diseases			0	0
DIS.4.8	Sense organ disorders	343	0	0	0
DIS.4.9	Oral diseases	1,475.00	3,459.00	0	132
DIS.4.nec	Other NCDs			304,929	333,949
	Injuries	**113,512.00**	**104,960.00**	**113,807**	**123,640**
	Non-disease specific	**13,533.00**	**21,905.00**	**763**	**4**
	Other and unspecified diseases/conditions (n.e.c.)	**338,876.00**	**316,557.00**	**12,219**	
		2,144,742.00	**2,035,298.00**	**2,015,058**	**2,203,547**

Uganda Development Partner Health Spending (including Households) by Disease Type, According to National Health Account Classifications, FY2012/13 – FY2015/16

		FY2012/2013	FY2013/2014	FY2014/2015	FY2015/2016
		Amount (UGX Millions)			
	Infectious and parasitic diseases	**1,474,846**	**1,672,499**	**1,819,572**	**1,770,200**
DIS.1.1	HIV/AIDS and Other STDs	1,137,568	1,216,253	1,622,297	1,518,852
DIS.1.2	Tuberculosis (TB)	12,496	11,422	21,501	10,505
DIS.1.3	Malaria	268,918	364,487	134,782	153,569
DIS.1.4	Respiratory infections	10,564	14,004	7,556	8,688
DIS.1.5	Diarrheal diseases	14,123	16,599	12,651	33,992
DIS.1.6	Neglected tropical diseases	206	0	156	0
DIS.1.7	Vaccine preventable diseases	24,449	46,506	16,286	36,506
DIS.1.nec	Other and unspecified infectious and parasitic diseases (n.e.c.)	6,522	3,228	4,341	8,088
	Reproductive health	**117,951**	**95,357**	**204,546**	**153,287**
DIS.2.1	Maternal conditions	22,820	38,204	92,221	63,325
DIS.2.2	Perinatal conditions	1,153	263	51,706	32,963
DIS.2.3	Contraceptive management (family planning)	87,744	37,322	31,937	34,206
DIS.2.nec	Unspecified reproductive health conditions (n.e.c.)	6,234	19,568	28,681	22,793
	Nutritional deficiencies	**52,990**	**3,723**	**3,204**	**49,761**
	Non-communicable diseases	**8,005**	**11,885**	**12,000**	**25,098**
DIS.4.1	Neoplasms	2,391	2,674	0	0
DIS.4.2	Endocrine and metabolic disorders	223	24	0	0
DIS.4.3	Cardiovascular diseases	277	105	0	0
DIS.4.4	Mental health	46	245	0	0
DIS.4.6	Digestive diseases			866	18,557
DIS.4.8	Sense organ disorders	3,900	7,441	6,550	6,178
DIS.4.9	Oral diseases	1,168	1,426	4,584	363
DIS.4.nec	Other NCDs			0	0
	Injuries	**5,307**	**8,218**	**3,218**	**371**
	Non-disease specific	**143,191**	**154,247**	**32,486**	**75,299**
	Other and unspecified diseases/conditions (n.e.c.)	**82,505**	**96,894**	**37,720**	**83,408**
		1,884,795	**2,042,822**	**2,112,746**	**2,157,424**

Uganda Total Health Spending (including Households) by Disease Type, According to National Health Account Classifications, FY2012/13 – FY2015/16

		FY2012/2013	FY2013/2014	FY2014/2015	FY2015/2016
		Amount (UGX Millions)			
	Infectious and parasitic diseases	**2,927,408**	**3,099,406**	**3,117,159**	**3,188,257**
DIS.1.1	HIV/AIDS and Other STDs	1,504,342	1,585,397	1,889,814	1,822,859
DIS.1.2	Tuberculosis (TB)	44,551	53,277	26,124	15,636
DIS.1.3	Malaria	1,047,031	1,102,960	885,696	960,451
DIS.1.4	Respiratory infections	205,488	198,802	192,019	227,692
DIS.1.5	Diarrheal diseases	71,703	70,528	92,233	105,774
DIS.1.6	Neglected tropical diseases	209	3	195	43
DIS.1.7	Vaccine preventable diseases	28,405	58,769	19,806	40,006
DIS.1.nec	Other and unspecified infectious and parasitic diseases (n.e.c.)	25,679	29,670	11,272	15,797
	Reproductive health	**682,063**	**643,080**	**732,867**	**773,521**
DIS.2.1	Maternal conditions	345,472	352,552	399,000	423,142
DIS.2.2	Perinatal conditions	210,166	199,884	250,530	268,180
DIS.2.3	Contraceptive management (family planning)	103,417	53,402	38,868	41,895
DIS.2.nec	Unspecified reproductive health conditions (n.e.c.)	23,008	37,241	44,469	40,304
	Nutritional deficiencies	**188,261**	**150,721**	**129,985**	**201,005**
	Non-communicable diseases	**220,165**	**233,485**	**540,533**	**620,860**
DIS.4.1	Neoplasms	36,315	38,658	35,350	40,092
DIS.4.2	Endocrine and metabolic disorders	2,431	2,367	2,310	2,606
DIS.4.3	Cardiovascular diseases	11,280	12,583	11,847	13,671
DIS.4.4	Mental health	32,535	29,252	32,141	44,663
DIS.4.6	Digestive diseases	0	0	866	18,560
DIS.4.8	Sense organ disorders	4,318	7,441	6,550	6,178
DIS.4.9	Oral diseases	133,287	143,213	143,205	154,142
DIS.4.nec	Other NCDs	0	0	308,263	340,948
	Injuries	**141,345**	**138,719**	**186,422**	**161,578**
	Non-disease specific	**210,714**	**230,675**	**36,344**	**78,826**
	Other and unspecified diseases/conditions (n.e.c.)	**474,473**	**460,801**	**123,537**	**134,705**
		4,844,430	**4,956,886**	**4,866,846**	**5,174,058**

ANNEX 2: METHODOLOGICAL NOTES

The Public Expenditure Review was undertaken in the context of the Health Sector Development Plan (HSDP), and grounded its analysis in the service delivery goals of the Government of Uganda in the areas of: (1) maternal and child health, (2) HIV/AIDS, (3) tuberculosis/malaria, (4) non-communicable diseases, and (5) immunization.

The analysis examined whether public expenditures were consist with policy priorities (allocative efficiency), whether they made efficient use of resources (technical efficiency), and what results were achieved (effectiveness). The analysis also explored the extent to which sector governance initiatives that underpin sector wide service delivery are progressing. This annex provides information on the data and methodology employed in addressing these issues.

MAJOR DATA SOURCES

The primary data source on expenditures throughout the analysis is drawn from the Government of Uganda's National Health Accounts (NHA) for fiscal years 2012/13 through 2015/16, with a few reference from NHAs from fiscal years 2008/09 through 2011/12 for comparative purposes. The NHA draws on data obtained by a Ministry of Health team from respondents in the Ministry of Finance, the government and private institutions and integrated Financial Management System (IFMS) Unit and is a reflection of the actual expenditure captured in its final accounts for both years. Data on GOU spending across all sectors was obtained through the IFMIS and Annual Budget Performance Reports for FY2011/12 through FY2016/17 at both the national and sub-national levels.

Most comparative data for benchmarking was obtained either from country's reported National Health Accounts, or from data reported in the World Bank World Development Indicators.

Uganda macro-economic data, such as the exchange rate and inflation, was principally obtained from the Bank of Uganda (June 2018). Gross domestic product was obtained from the IMF World Economic Outlook for April 2018.

Health outcome and other demographic data was primarily from the series of Demographic and Health Surveys (DHS), which are available for Uganda for the years 2000/01, 2006/07, 2011/12 and 2016/17, as well as data from the Institute for Health Metrics and Evaluation (IHME) 2017 Global Burden of Disease report and database.

More specialized datasets were consulted for individual service delivery areas. For example, HIV/AIDS and Tuberculosis data was sourced from UNAIDS and the World Health Organization. Data on Malaria service delivery and efficiency was obtained through studies published on Medicines for Malaria Venture. Data on immunization cost and coverage was obtained from the database maintained by the Immunization Costing Action Network and two Uganda Effective Vaccine Management (EVM) assessments. Data on the cost of common medical treatments was obtained through the Uganda Medicine Price Monitor. Data on health center level costs and services was obtained from the Access, Bottlenecks, Costs, and Equity survey results. A full list of references is included in Annex 4.

Qualitative information was gathered to complement available quantitative data through the conduct of key informant interviews at both the central and sub-national levels. A list of persons consulted is included in Annex 4. In each key informant interview a set of common questions were posed to respondents on key aspects of budget planning, implementation and reporting. Researchers followed-up on the base set of questions as relevant based on the responses of the key informant. Notes were prepared by the teams conducting the site visits to preserve the accuracy of the information reported.

REVIEW OF HEALTH FINANCING TRENDS AND ALLOCATIVE EFFICIENCY

The PER examined issues of allocative efficiency by comparing policy statements of priorities of the health sector to where resources have been directed. This was done on the basis of both budgeted and actual expenditures. A description of the major analytic techniques employed is provided below.

Overall health financing trends. Health financing trends were considered on the basis of adequacy and consistency with stated national priorities. This analysis included an assessment of the level of health sector spending on the basis of: (1) percent of GDP; (2) percent of government spending; and (3) on a per capita basis. It explored how these metrics have changed over time and how they compare to benchmark countries such as Kenya, Ghana, and South Africa). The analysis also compared spending against international standards such as the target of public sector health spending representing 5 percent of GDP as set by the Chatham House working group on Sustainable Health Financing in the context of moving toward universal health coverage and the 15 percent of government spending target set by the World Health Organization (WHO), among others.

This analysis also considered how macro-economic changes – such as fluctuation in the prices for health sector supplies and the changes in the exchange rate – would have impacted the buying power of the health sector budget over the period under analysis.

Allocative efficiency of financing. This section explored the extent to which the government has been providing funding to the service delivery areas that are prioritized in the HSDP. This was done by examining the extent to which the composition of health sector spending has changed over time, and whether priority areas have increased their relative importance in the health sector budget. In the service delivery sub-sections, the analysis focused explicitly on the share of funding directed to the following service delivery areas: (1) maternal and child health, (2) HIV/AIDS, (3) tuberculosis/malaria, (4) non-communicable diseases, and (5) immunization. Each of these areas were examined in further detail under the service delivery chapters. This analysis looked at total funding including development partners as well as GOU funding only.

Sector Financial Management Governance. This section examined the extent to which the policies and systems are in place needed to properly plan, budget and implement the health sector's budget in support of the service delivery priorities of the Government of Uganda. This section reviewed in particular: (1) progress on implementation of PBB; (2) arrangements for supervision, reporting and performance evaluation; (3) efforts to improve procurement planning; and (4) other budget execution issues.

SERVICE DELIVERY EXPENDITURE ANALYSIS

This section focused on the service delivery priority areas defined by Ministry of Health, notably including: (1) maternal and child health, (2) HIV/AIDS, (3) tuberculosis/malaria, (4) non-communicable diseases, and (5) immunization. Each of these service delivery areas had a separate sub-section which included: financing trends, efficiency of service delivery, effectiveness of service delivery, and equity and inclusiveness of service delivery. The major tools of analysis in each of these areas are described below.

Financing Trends. For each of the defined service delivery areas, the PER looked at how spending on these service has evolved over the past five years in terms of amounts budgeted, executed and, where possible, per capita spending for each area. The analysis also looked at the composition of spending in terms of recurrent and capital expenditure and budget execution rates by category of expenditure (i.e., salary, goods and service, maintenance, and development spending). This section also looked at source of funding, noting areas where external funding is a large portion of funding and cases where that funding has been increasing or decreasing.

Efficiency of Service Delivery. The efficiency of spending was examined through analysis of the costs of delivering various key services. This was done primarily by looking at unit costs. For example, taking immunization as an example:

- What is the total average cost of delivering an immunization?
- How has that average unit cost changed over the past 3-5 years?
- How does that average unit cost differ across Uganda?
- How does that average unit cost compare to benchmark countries?

The analysis also explored issues of major cost drivers (such as costs of pharmaceuticals and laboratory costs), as well as economies of scale in service delivery. This would be the case when there is a large fixed investment either annually or periodically, but the marginal cost of service delivery is much lower. For example, there may be a somewhat high level of investment needed to extend the vaccine cold chain to a new area, but the marginal cost of each vaccination is relatively low.

Effectiveness of Service Delivery. The analysis of the effectiveness of government spending examined whether spending in key service delivery areas was accompanied with improvements in related health outcomes. This was done through a few methods, including notably:

- ***Comparative trend analysis***: As aggregate spending on the service delivery area has changed, how has the most relevant outcome area changed (i.e., as spending on TB has changed, how has TB prevalence changed?).
- ***Simple correlation analysis***: Comparison of levels of funding (by year and/or service delivery unit) and major health outcomes through a simple correlation and/or scatterplot. There may be a lag of 1 to 2 years between the year of funding (generally on a per capita basis) and the measurement of the health outcome to allow for the effects of preventive care to take place, depending on the service delivery area. The scatter plot analysis, in particular can identify whether: (1) there is a clear linear relationship between increased funding and improved outcomes; (2) there are high or low performers that might point to either innovative approaches or idiosyncratic factors that affect their ability to deliver effective services; and (3) the spread of performance between high and low performers.

This information was supplemented with information on the quality of service delivery from other recent studies and from qualitative information gathered through site visits to the districts.

Equity and Inclusiveness of Service Delivery. Where data is available, the analysis looked at the alignment of spending with goals to improve equity and inclusiveness. This analysis was undertaken using one or more of the following methods:

- Analysis of disparate health outcomes between richer and poorer areas of the country (or if household survey data is available between richer and poorer households);
- Analysis of the level of resources that are directed to poorer areas of the country; and/or
- Budgeted and actual amounts spent on specialized programs that disproportionately benefit vulnerable groups.

This analysis was done both on an overall basis, and for each of the targeted service delivery areas.

ANNEX 3: LIST OF PERSONS MET

MINISTRY OF HEALTH

NAME	TITLE
Ssegawa Ronald Gyangenda	Under Secretary, Ministry of Health
Dr. Immaculate Ampaire	Senior Medical Officer - MOH- UNEPI (Immunizations)
Lutimba Fred Henry	Head; Procurement and Disposal Unit
Dr. Ebony Quinto	M&E Specialist -TB Control Programme
Dr. Stephen Opio Okiror	Commissioner – Human Resource Management
Annet Musiime	Assistant Commissioner – Internal Audit
Dr. Olaro Charles	Director, Clinical Services
Dr. Jackson Amone	Commissioner – Curative Services
Dr. Alfred Driwale	Assistant Commissioner – Curative Services
Harriet Naluzze	Assistant Commissioner - Accounts

DEVELOPMENT PARTNERS

NAME	TITLE
Garoma Kena	Senior Health Systems Strengthening Adviser
Peter Okwero	Senior Health Specialist World Bank

MBARARA DISTRICT

NAME	TITLE
District	
Felix Esoku	CAO
Agatha Nshabohurira	ADHO
Twesigye Gadi	CFO
Kanyate Geofrey	Accountant in-charge Health
Bagume Robert	Senior Procurement Officer
Muhwezi Pius	HRO
Kato Robert	Population Officer
Mbarara Regional Referral Hospital	
Dr. Barigye Celestine	RRH Director
Dr. Kumbakumba	Head of Pediatrics and Child Health Department
Omongin Augustine	Head of Finance
Ssamba Amos	Head PDU
Balikuddembe Joseph	Human Resource Officer
Ndeija Health Centre III	

Mugisha Charles	In-charge
Kamusiime Jolly	Nursing Officer/ Mid wife

RUKUNGIRI DISTRICT

NAME	TITLE
District	
Sande Kyomya	CAO
Yoga Mike	DCAO
Sr Florence Katunguka	ADHO
Asiimwe Jolam	CFO
Robert	Senior Finance Officer- Budget
Murekyezi Gordon	Senior Procurement Officer
Tumwebaze Ivan	HRO
Bwambara Health Centre III	
Baryomunsi Emmanuel	Senior Clinical Officer/ In-charge
Kabandize Denis	Nursing Officer
Boonabana Doreen	Mid Wife

KABALE DISTRICT

NAME	TITLE
District	
Ntimba Edmond	DCAO
Olivia Kebirungi	Secretary HR
Mujjuni Julius	CFO
Mugisha Margret	Accountant
_____ James	Vector Control Officer
Oliver	ADHO (Sr. Environmental Health Officer)
Atuheire Mercy	Head PDU
Kabale Regional Referral Hospital	
Lamunu Florence Okello	Sr. Nursing Officer (Private Wing)
Julius Byaruhanga	Head PDU
Abassa Caroline	Assistant Records Officer (HR)
Emily Tugumisiriza	Nursing Officer (HIV/AIDS In-charge)
Johnson Mwebembezi	Medical Social Worker (HIV/AIDS)
Kamukama Emmanuel	Head of Accounts
Kyanamira Health Centre III	
Kyomugugisha Angela	Nursing Officer (Ag In-charge)

WAKISO DISTRICT

NAME	TITLE
District	
Juliet Bakobya	Head HR
	DCAO
	DHO
	DDHO MNCH
	DDHO PPDH
	Biostatistician
	DH Educator
Entebbe General Hospital	
Moses Muwanga	Administrator?
Juliet Ayikow	Nurse (NCD)
Dr. Joyce Maliwemba	Director HIV Services
Kakiri Health Centre III	
Juliet Nasoon	Sr. Clinical Officer (In-Charge)

ANNEX 4: BIBLIOGRAPHY

1. World Bank (2018). "World Development Indicators." Washington, D.C. May 2018 update. https://data.worldbank.org/products/wdi

2. International Monetary Fund (2018). World Economic Outlook, April 2018: Cyclical Upswing, Structural Change. Washington, DC, 2018. http://www.imf.org/en/Publications/WEO/Issues/2018/03/20/world-economic-outlook-april-2018

3. MOFPED (2013, 2017) MOFPED Annual Budget Performance Reports (FY2012/13 – FY2016/17).

4. Bank of Uganda (2018). "Statistics." Kampala, Uganda. June 2018. https://www.bou.or.ug/bou/rates_statistics/statistics.html

5. Health Economics Cell, Ministry of Health, Nutrition & Indigenous Medicine Sri Lanka (2016). Sri Lanka National Health Accounts 2013. The Ministry of Health, Sri Lanka, Colombo (see: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/NHA/Sri%20Lanka%20National%20Health%20Accounts%202013.pdf)

6. Ministry of Health (2013, 2015, 2017). National Health Accounts (NHA) 2011/12, 2012/13, 2013/14, 2014/15 and 2015/16.

7. National Planning Authority. "Uganda Vision 2040." Kampala, Uganda. April 2013. http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf

8. Ministry of Health. "Health Sector Development Plan 2015/16 – 2019/20." Kampala, Uganda. September 2015. http://www.health.go.ug/sites/default/files/Health%20Sector%20Development%20Plan%202015-16_2019-20.pdf

9. Ministry of Health (2017). "Annual Health Sector Performance Report Financial Year 2016/17." Kampala, Uganda. September 2017. http://health.go.ug/content/annual-health-sector-performance-report-201617

10. Uganda Bureau of Statistics (UBOS) and ICF. 2017. Uganda Demographic and Health Survey 2016: Key Indicators Report. Kampala, Uganda: UBOS, and Rockville, Maryland, USA: UBOS and ICF.

11. World Health Organization. "Global Health Observatory data repository." Geneva, Switzerland. 2018. http://apps.who.int/gho/data/?theme=main

12. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2016 (GBD 2016) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2017. Available from http://ghdx.healthdata.org/gbd-results-tool.

13. Ministry of Finance, Planning and Economic Development (MOFPED 2013). Annual Budget Performance Report (FY 2012/13). Available from: http://www.budget.go.ug.

14. MOFPED (2014). Annual Budget Performance Report (FY 2013/14). Available from: http://www.budget.go.ug.

15. MOFPED (2015). Annual Budget Performance Report (FY 2014/15). Available from: http://www.budget.go.ug.

16. MOFPED (2016). Annual Budget Performance Report (FY 2015/16). Available from: http://www.budget.go.ug.

17. MOFPED (2017). Annual Budget Performance Report (FY 2016/17). Available from: http://www.budget.go.ug.

18. MOFPED (2018). Data provided from the Government of Uganda IFMS.

19. Ministry of Finance, Planning and Economic Development (2016). "Local Government Performance Reports, Quarter 4/Annual, FY 2015/16." Kampala, Uganda. 2016. Available from: http://www.budget.go.ug.

20. World Bank (2016). "The Uganda Poverty Assessment Report 2016." Washington, DC. September 2016. http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf

21. Government of Uganda Programme Based Budgeting Manual (Draft July 2018)

22. CSBAG (2017). Independent Evaluation FY 2017/18 Program-Based Budgeting. Civil Society Budget Advocacy Group (CSBAG). September – October 2017. http://csbag.org/wp-content/uploads/2018/01/INDEPENDENT-EVALUATION-FY-2017-18-PROGRAMME-BASED-BUDGETING2.pdf

23. Government of Uganda. "Health Sector Budget Framework Paper FY 2018/19 – FY 2022/23." Kampala, Uganda. 2018. http://budget.go.ug/budget/sites/default/files/Sector%20Budget%20Docs/08%20Health.pdf

24. Ministry of Local Government. "Ministry of Local Government Fact Sheet." Kampala, Uganda. 2017. http://www.molg.go.ug/sites/default/files/MoLG%20-%20%20Fact%20Sheet.pdf

25. Government of Uganda. "Local Government Performance Contracts FY 2016/17." Kampala, Uganda. 2016. http://www.budget.go.ug/budget/individual-lg-budgets-and-performance-reports

26. Ministry of Health. "Primary Health Care Grants Guidelines, Financial Year 2016/17." Kampala, Uganda. 2016. http://health.go.ug/content/primary-health-care-grants-guidelines

27. Uganda Ministry of Finance, Planning and Economic Development. "Integrated Financial Management System." Kampala, Uganda. 2018.

28. Ministry of Finance, Planning and Economic Development. "Annual Budget Performance Reports (FY2012/13 – FY2016/17)." Kampala, Uganda. http://www.budget.go.ug/budget/national-budget-performance-reports

29. Kauta, John (2017). "Uganda Health Sector: Budget Execution Bottlenecks Report," USAID Leadership in Public Financial Management II (LPFM II), May 2017.

30. Simon Kasasa, John Kissa, Carol Kyozira, Fredrick Makumbi, Eddie Mukooyo, Betty Nambuusi, Jimmy Opigo, Damian Rutazaana, Julius Ssempiira, and Penelope Vounatsou, "The effect of case management and vector-control interventions on space–time patterns of malaria incidence in Uganda," Malaria Journal,17:162, 2018, https://doi.org/10.1186/s12936-018-2312-7.

31. MOH-DHI (2018). "Health Sector Quarterly Performance Review: Q3: FY 2017/2018." Ministry of Health Division of Health Information. Presentation at the Health Sector Quarterly Performance Review in Kampala Uganda, 10 May 2018.

32. *Monitoring and Evaluation Technical Support (METS) program, February 2018 (http://mets.or.ug/)*

33. Morgan, Lindsay (2010). Some days are better than others: lessons learned from Uganda's first results-based financing pilot. World Bank Brief, 53985, Africa Region, April 1, 2010.

34. World Bank (2016). Project Appraisal Document: Uganda Reproductive, Maternal and Child Health Services Improvement Project. Health, Nutrition and Population Global Practice Africa Region ,July 14, 2016.

35. Uganda AIDS Commission. "National HIV and AIDS Priority Action Plan 2015/16—2017/18." Kampala, Uganda. 2015. http://library.health.go.ug/publications/service-delivery-diseases-control-prevention-communicable-diseases/hivaids/national-h-4

36. Vu, Lung et al. "Annual cost of antiretroviral therapy among three service delivery models in Uganda." J Int AIDS Soc. 2016; 19(5Suppl 4): 20840. Published online 2016 Jul 20. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4956730/

37. Moreland, Scott, et al. The Costs of HIV Treatment, Care, and Support Services in Uganda. Futures Group/MEASURE Evaluation. USAID MEASURE Evaluation cooperative agreement. February 2013

38. Koseki, S., T. Fagan, and V. Menon. 2015. Sustainable HIV Financing in Uganda. Washington, DC: Futures Group, Health Policy Project. Available: https://www.healthpolicyproject.com/pubs/2877_UgandaHIVFinancing.pdf

39. Lyatuu, Justus. "Ugandan-made ARVs too Costly." The Observer. September 21, 2016. Available: http://observer.ug/news-headlines/46565-ugandan-made-arvs-too-costly

40. UNAIDS. "Country Fact Sheets, Uganda, 2017."Geneva, Switzerland. 2017. http://www.unaids.org/en/regionscountries/countries/uganda

41. Global Fund (2016) Audit Report: Global Fund Grants to the Republic of Uganda. Global Fund. Geneva. Available: https://www.theglobalfund.org/media/2646/oig_gf-oig-16-005_report_en.pdf

42. World Health Organization. "World Malaria Report 2017, Country Profiles, Uganda." Geneva, Switzerland. 2017. http://www.who.int/malaria/publications/country-profiles/profile_uga_en.pdf

43. U.S. President's Malaria Initiative. "Uganda, Malaria Operational Plan FY 2018." Washington, DC. 2017. https://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-2018/fy-2018-uganda-malaria-operational-plan.pdf?sfvrsn=11

44. Medicines for Malaria Venture. "Supply Chain and Price Components of Antimalarial Medicines: Uganda 2007." Geneva, Switzerland. 2008. http://haiweb.org/wp-content/uploads/2015/07/Supply-Chain-and-Price-Componenets-of-Antimalarial-Medicines-in-Uganda.pdf

45. Coalition for Health Promotion & Social Development (HEPS). "Cost and Pricing: An Assessment of Private Health Facilities in Uganda." Cardno Emerging Markets USA, Ltd. 2014. http://uhfug.com/wp-content/uploads/2017/04/An-assessment-Of-Private-Health-Facilities-In-Uganda.pdf

46. The Global Fund (2016) Audit Report: Global Fund Grants to the Republic of Uganda. Global Fund, Geneva

47. Institute for Health Metrics and Evaluation (IHME). Health Service Provision in Uganda: Assessing Facility Capacity, Costs of Care, and Patient Perspectives. Seattle, WA: IHME, 2014.

48. National Malaria Control Programme, Abt Associates and the INFORM Project (2013). An epidemiological profile of malaria and its control in Uganda. A report prepared for the Ministry of Health, the Roll Back Malaria Partnership and the Department for International Development, UK. October, 2013

49. Medicines Transparency Alliance. "Medicine Price Monitor for Uganda No. 11: July-Sept. 2013." Kampala, Uganda. 2013. http://apps.who.int/medicinedocs/en/m/abstract/Js21906en/

50. Medicines Transparency Alliance. "Medicine Price Monitor for Uganda No. 12: July-Sept. 2014." Kampala, Uganda. 2014. http://apps.who.int/medicinedocs/en/m/abstract/Js22316en/

51. Medicines Transparency Alliance. "Medicine Price Monitor for Uganda No. 13: May-June. 2015." Kampala, Uganda. 2015 http://apps.who.int/medicinedocs/en/m/abstract/Js22317en/

52. Family Planning 2020/United Nations Foundation. Uganda Country Page. Washington, DC. 2018. http://www.familyplanning2020.org/entities/80

53. FP2020/UNF. "Family Planning 2020 Commitment, Govt. of Uganda." London, UK. July 2017. http://ec2-54-210-230-186.compute-1.amazonaws.com/wp-content/uploads/2018/02/Uganda_FP2020_Commitment_2017.pdf

54. Nam, Sarah. "Final Evaluation of the Figo Saving Mothers and Newborns Project in Uganda." Options, July 2011. https://www.figo.org/sites/default/files/uploads/project-publications/SMN/Uganda_3.pdf

55. MOH (2016). 2016- 2020 Comprehensive Uganda National Expanded Program on Immunization (EPI) Multi Year Plan. Ministry of Health, 2016.

56. Immunization Costing Action Network (ICAN). 2018. *Immunization Delivery Cost Catalogue*. Washington: ThinkWell. April 2018

57. MOH (2014). Uganda Effective Vaccine Management (EVM) assessment: Findings and Recommendations of the Assessment Team, October 2014.

58. Musubire, William (2015). "Uganda – Lessons Learned from Improving Vaccine Management Using EVM Approach" Presentation at the 14th TechNet Conference, Bangkok Thailand, 11 – 15 May 2015. Available: http://www.technet-21.org/images/TC2015/08_Country_Innovations_Uganda_William_Musubire.pdf

59. The Uganda NCD Alliance. "The Uganda NCD Alliance Strategic Plan 2016-2019." Kampala, Uganda. June 2016. https://ncdalliance.org/sites/default/files/Sample%206-UNCDA%20Draft%20Strategic%20plan%202016%20-%202019.pdf

60. UBOS, "Uganda National Household Survey 2016/17." Kampala, Uganda. September 2017. https://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/UNHS_VI_2017_Version_1_%2027th_September_2017.pdf

61. MOH 2017. Government to increase access to non- communicable disease medicines. Available: health.go.ug/download/file/fid/145

62. World Health Organization. "Non-communicable Diseases (NCD) Country Profiles, 2014, Uganda." Geneva, Switzerland. 2014. http://www.who.int/nmh/countries/uga_en.pdf?ua=1

63. Settumba et al. "The health system burden of chronic disease care: an estimation of provider costs of selected chronic diseases in Uganda, Tropical Medicine and International Health, Volume20, Issue6, Pages 781-790, June 2015. Available: https://onlinelibrary.wiley.com/doi/full/10.1111/tmi.12487

64. Institute for Health Metrics and Evaluation (IHME). "Health Service Provision in Uganda: Assessing Facility Capacity, Costs of Care, and Patient Perspectives." Seattle, WA. IHME, 2014.

65. Schwartz et al. 2014, Looking at non-communicable diseases in Uganda through a local lens: an analysis using locally derived data. Globalization and Health 10:77. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4240853/pdf/12992_2014_Article_77.pdf

66. Murray CJL, et al., on behalf of the Global Burden Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010. The Lancet. 2012; 380(9859): 2197–2223

67. Weisgrau, S. Issues in Rural Health: Access, Hospitals, and Reform. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4193574/pdf/hcfr-17-1-1.pdf

68. Ministry of Health. "Annual Health Sector Performance Report Financial Year 2015/16." Kampala, Uganda. 2016. http://health.go.ug/sites/default/files/AHSPR%202015_16.pdf