

**Introduction:** This study was to establish the average cost of health services provided by Our lady of Consolata Hospital in the financial year 2012/2013, with a view of providing costing information, for scientific evidence based decision making, thus promoting efficient use of scarce health resources.

**Objectives:** The main objective of the study was to establish the average cost of providing hospital services in our lady of Consolata Kisubi hospital for the financial year 2012/2013 and the specific objectives were;

1. To determine the total cost of providing various hospital services in our lady of Consolata Kisubi Hospital.
2. To determine the average cost per unit output of service produced in our lady of Consolata Kisubi Hospital.
3. To determine the average cost recovery per total cost of services charged at our lady of Consolata Kisubi Hospital.

**Methodology:** the study adopted a retrospective cost analysis design and a step-down methodology.

### Findings of the study

<b>Final Cost Centers</b>	<b>Total Cost Per Cost Centre</b>	<b>Output</b>	<b>Number of Outputs</b>	<b>Average Unit Cost In UGX</b>	<b>Average Unit Cost In USD</b>
Lab	186,667,643	Test	55,782	3,346	1.3
Radiology	74,027,361	Visit	6,257	11,831	4.6
Theatre	1,007,510,118	Operation	2,269	444,033	170.8
Maternity	433,755,636	Admission	2,305	188,180	72.4
OPD	408,160,353	Visit	31,929	12,783	4.9
Children's Ward	182,253,337	Admission	914	199,402	76.7
Adult Ward	232,667,378	Admission	1,259	184,803	71.1
Antenatal		Visit			3.8

Clinic	61,342,850		6,272	9,780	
Dental					
Clinic	33,952,504	Visit	1,889	17,974	6.9
HIV & ART					
Clinic	73,756,905	Visit	6,525	11,304	4.3
		All			
Total	3,704,135,506	Outputs	115,401	32,098	12.3

With a total cost recovery of 60%. The study recommends adoption of these costs as a basis for setting charges, considering areas of efficiency gains especially in medicines, the identified cost recovery gap should be used as a justification further financial resources mobilization. Other studies should be done periodically and should be done in hospitals of similar settings to assess the cost variance.

**BACKGROUND:** Need and demand for health care often exceeds available resources, hence this increases need for efficient use of available resources especially with the decreasing budgets allocated to health care in many countries like the USA ,UK (Arai 2006) and this pattern is also seen in Uganda.

Due to this health care resource's scarcity, need for hospital resources utilization approaches that allow maximum efficiency and equity are on the rise, such approaches Demand for the use costing information in hospitals but efforts to avail such information have often been frustrated by absence of adequate data (Beecham et al. 1997).Development of fee schedules for different health services should always remain sensitive to affordability and sustainability. High Patient fees charge in a hospital, may serve to undermine both affordability and sustainability. To help prevent such scenarios, manuals to aid use costing information in pricing decisions have been developed like the one of Belgium (Nathalie et al. 2012),thus helping policy makers in decision making. Such Decision must be made first and based on scientific evidence, but often this data is lacking, due to gaps in costing knowledge at various levels of care. Costing information can be used for Advocating for more funding to hospitals, improve efficiency and quality of health care services provided by hospitals especially in this era of Rising hospital cost against declining funding that threatens the very foundation of hospital's sustainability

**Background to the study area:** Our lady of Consolata Kisubi hospital is located in Wakiso District, it's a private not for profit (PNFP) hospital with a bed capacity of 100 beds, It's the headquarters of Busiro South Heath Sub-district in Wakiso District. Hospital revenues for financial year (f/y) 2012/2013 (figures in thousands) was; User fees collection 2,156,574,000 Primary Health Care (PHC) conditional grants to Hospital 93,695, 000. The hospitals main challenges include; High employment costs, high staff turnover, and gaps in costing information.

**GENERAL OBJECTIVE:** Establish the average cost and the cost recovery of providing hospital services in our lady of Consolata Kisubi Hospital in the financial year 2012/13.

**SPECIFIC OBJECTIVES:**

To determine the total cost of providing various hospital services in our lady of Consolata Kisubi Hospital for the financial year 2012/2013.

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2. To determine the average cost per unit output of service produced in our lady of Consolata Kisubi Hospital for the financial years 2012/2013.
3. To determine the average cost recovery per cost of service charged at our lady of Consolata Kisubi Hospital in the financial year 2012/2013.

**METHODOLOGY:** This study was a retrospective cross sectional descriptive study was conducted with facility based approach and taking a provider based perspective of estimating costing of health care services using a step down accounting methodology for the F/Y 2012/2013

**Costing method:** A step down cost accounting method used involving seven steps for computing unit costs, (Hanson and Gilson, 1996)

1. Define the final product; the final products included a test for laboratory, a Procedure for radiology, an operation for theatre, and an admission for, a visit for OPD, dental, antenatal and HIV clinic
2. Define cost centers, these were hospital departments, and were categorized as overhead including administration, intermediate including all supporting cost centers like laundry, mortuary and ancillary cost center like pharmacy plus final cost centers like laboratory, radiology, OPD, adults ward, children's ward, maternity, antenatal, theatre and HIV and ART clinic
3. Identification of full costs of each input was derived for buildings the ministry of works guideline for a square meter of a building was employed, for human resource cost the hospital's payroll was used, and for medicines there actual value was derived, while the equipment prices were derived from the JMS catalogue and ministry of health's infrastructure division guidelines.
4. Assignment of inputs to cost centers was performed by analysis of all the main cost drivers that included personnel, buildings, utilities, medicines/sundries and equipment.
5. Allocate all costs to final cost centers was done using step down methodology.
6. Computation of total cost was done by combining all cost including direct and indirect cost then; the unit cost was derived by dividing total cost by the number of outputs.
7. Reporting was done by a record of the findings submitted to the hospital medical superintendent.

**Data collection:** Data was collected by one lead researcher, alongside two research assistants, with support from two staff of the hospital in the various departments that are to be studied, with interest in people with access to utilization data (records officers), financial data, equipment, and knowledge of staff and hospital activities.

**Quality measure/control:** Pretesting of instrument was performed in Entebbe hospital on top of using standard tools for data collection. Person with basic knowledge of health information management system were employed

**Ethical issues:** A letter of authorization to conduct a costing study on Kisubi hospital was issued by international health Sciences University. A written approval to conduct the study was received plus informed consent being sought from every study participant.

**RESULTS: Identified cost centers**

<b>Overhead Cost Center</b>	<b>Support Cost Centers</b>	<b>Ancillary Cost Centers</b>	<b>Final Cost Centers</b>
Administration	Security	Pharmacy	Adult Ward
	Transport	Mortuary	Children's Ward
		Laundry	Maternity Ward
			OPD
			Antenatal
			Dental Clinic
			Theatre
			HIV & ART Clinic
			Laboratory
			Radiology

**Final cost centers and their respective outputs**

<b>Final Cost Centers</b>	<b>Measure</b>	<b>Output</b>	<b>Number</b>	<b>Deaths</b>
Adult Ward	Inpatient	Admission	1,259	47
		In Patient Day	3,690	
Children's Ward	Inpatient	Admission	914	46
		In Patient Day	3,136	
Maternity Ward	Inpatient	Admission	2,305	9
		In Patient Day	5,934	
Outpatients Department	Attendance	Visit	31,929	
Antenatal Clinic	Attendance	Visit	6,272	
Dental Clinic	Attendance	Visit	1,889	

Theatre	Operation	Major	311	
		Caesarian Section	597	
		Minor	1,361	
HIV & ART Clinic	Attendance	Visit	6,525	
Laboratory	Attendance	Test	55,782	
X Ray	Attendance	A Procedure	1,060	
Scan	Attendance	A Procedure	5,197	

Source: HMIS 105/108, annual analytical report for Kisubi hospital

Average unit cost per output in the final cost center

Final Cost Centers	Total Cost Per Centre	Unit of Measurement	Output	Number Of Outputs	Average Unit Cost In UGX	Average Unit Cost In USD
Lab	186,667,643	Attendance	Test	55,782	3,346	1.3
Radiology	74,027,361	Attendance	Visit	6,257	11,831	4.6
Theatre	1,007,510,118	Operation	Operation	2,269	444,033	170.8
Maternity	433,755,636	Inpatient	Admission	2,305	188,180	72.4
OPD	408,160,353	Attendance	Visit	31,929	12,783	4.9
Children's Ward	182,253,337	Inpatient	Admission	914	199,402	76.7
Adult Ward	232,667,378	Inpatient	Admission	1,259	184,803	71.1
Antenatal Clinic	61,342,850	Attendance	Visit	6,272	9,780	3.8
Dental Clinic	33,952,504	Attendance	Visit	1,889	17,974	6.9
HIV & ART Clinic	73,756,905	Attendance	Visit	6,525	11,304	4.3
Total	3,704,135,506		All Outputs	115,401	32,098	12.3

#### Percentage total cost recovery under total cost scenario

Final Cost Centers	Unit Of Measurement	Total Cost Per Centre	Output	Number Of Outputs	Total User Fees	Cost Recovered/Lost	Percentage Recovery
Laboratory	Attendance	186,667,643	Test	55,782	17,142,019	-15,247,452	92%

Radiology	Attendance	74,027,361	Visit	6,257	195,071,447	121,044,086	264%
Theatre	Operation	1,007,510,18	Operati on	908	257,701,605	-749,808,513	26%
Maternity	Inpatient	433,755,636	Admiss ion	2,305	611,416,151	177,660,515	141%
OPD	Attendance	408,160,353	Visit	31,929	484,261,131	76,100,778	119%
Children's Ward	Inpatient	182,253,337	Admiss ion	914	161,639,268	-20,614,069	89%
Adult Ward	Inpatient	232,667,378	Admiss ion	1,259	215,835,910	-16,831,468	93%
Antenatal Clinic	Attendance	61,342,850	Visit	6,272	149,813,147	88,470,297	244%
Dental Clinic	Attendance	33,952,504	Visit	1,889	42,293,009	8,340,505	125%
HIV &ART Clinic	Attendance	73,756,905	Visit	6,525	8,737,901	-65,019,004	12%
Total		3,704,135,506			2,240,852,334	-1,463,283,172	60%

## DISCUSSION:

**Objective 1:** To determine the total cost of providing various hospital services in our lady of Consolata Kisubi hospital for the financial year 2013/2014

The total cost of providing hospital services was 3,704,135,506 Uganda shillings (UGX).

Kisubi hospital laboratory and radiology cost centers were treated as final cost centers because some clients come specifically for those investigations and they were neither from any of the other departments and so to strengthen the departments, we needed to establish their cost of production individually, unlike in the Lacor study where they were treated as intermediate cost centers (Muru et al. 2003)

The laboratory and outpatient department respectively had the highest number of output because the commonest trend is that all departments send tests to the laboratory on top of the self-referrals coming from none of the departments, and the high outpatient department utilization is an indicator of good hospital performance and a call to advocate for more resources to enable provision of satisfactory health care.

The cost of human resources going to the administration was highest because it encompassed all administration staff and support staff yet the hospital did not contract any agency to provide other services like security, cleaning and maintenance and maternity followed next to administration due to it being more labor intensive and its staff taking a large share of staff benefits like housing.

According to the results the main cost drivers are buildings, human resource cost and medicines implying that if we are to achieve adequate efficiency gains we should focus our attention on improving these, and the total direct cost is about half that incurred by Lacor hospital 10 years ago this reflects how the results remain specifically relevant to the hospital in question. the findings seem to rime with those of Kamara where the major cost driver where human resources and medicines (kamara 2013) which are equally recurrent cost

The average unit cost for all operations was 1,007,510,118 UGX slightly higher compared to that of Kayunga Hospital at 95,008,292 UGX (kamara 2013) for the same financial year 2012/2013 relative to number of operations conducted. The findings demonstrate that operations are equally the most expensive procedure in the hospital.

It's also notable that the cost of medication would greatly rise if the assessment included cost of anti-retroviral drugs, but this study like the Kayunga hospital study excluded ARV's cost because data on their actual cost was not available.

The total cost of an OPD visit was 408,160,353 UGX comparable to that of Kayunga hospital at 168,140,023 UGX (Kamara 2013) a fact that may be explained by the economic characteristics of the hospital users, those of Kisubi hospital are fairly Peri-urban and wealthier than those of rural Kayunga Hospital, with equally more client paying more fees for various services.

**Objective 2:** To determine the average cost per unit output of service produced in our lady of Consolata kisubi for the financial years 2012/2013

The average unit cost of service produced in our lady of Consolata kisubi for the financial years 2012/2013 was 32,098 UGX or 12.3USD . The average unit cost of an operation is very high at 170 USD but its comparable with the one in the Lacor hospital study that put it at 140 USD (Muru et al. 2003) putting into consideration the time variation the implication is that the cost is closely similar, however there is a huge variation from the cost of a major operation derived for Nyenga hospital at 690 USD (kamara 2013)and deeper analysis shows that the biggest consumer of theatre resources are the major operations followed by the caesarian section a trend consistent with other studies. Average cost of OPD is comparable consistent and comparable with other studies, since both the Lacor and Kisubi study put the cost at 2-5 dollars.

**Objective 3:** To determine the average cost recovery per cost of service charged at our lady of Consolata Kisubi hospital in the financial year 2012/13

Although very few studies have focused attention on assessing cost recovery part of this studies objective was to identify exactly this, findings reflected a deficit, based on the overall total cost of the hospital 60% could be recovered this renders it unsustainable unless the fee charges are revised to allow adequate cost recovery or other mechanisms of hospital financing are employed.

Since the hospital uses fee for service block sums of user fees were used to subtract cost to establish

cost recovery, on comparison both the kayunga hospital and the kisubi hospital studies showed a deficit in most department when using total cost scenario a trend that was maintained in the kayunga study, however relatively improved to have fewer deficits in the kisubi study.

**CONCLUSIONS:** The total cost and average unit cost derived was comparable to those of various other hospitals in Uganda that are private not for profit hospitals. Administration possesses the biggest cost amongst all departments and it consumes a great part of the infrastructure to cost center department. The hospital's operation theater is being underutilized since it sees fewer clients thus contributing to the rising cost of operating it. There is a negative cost recovery, a reflection that the hospital is currently spending more resources than it can recover through its charges and this renders its future unsustainable.

**RECOMMENDATION:** The study recommends adoption of these costs as a basis for setting the prices/charges in the hospital; the hospital should embark on use of this evidence to redesign the prices it charges, new price schedules that foster adequate cost recovery while balancing with meeting the need of the hospital clients in terms of access cost and quality. Areas of efficiency gains especially in medicines cost management should be considered, like rational use of medicines and adoption of the use of generic medicines instead of branded medicines. To use this scientifically generated data showing a deficit in what is required to run the hospital, to advocate for additional resources, and lobby for more legislative changes like tax holidays for hospital staff and advocate for more funding. Other costing studies should be done periodically and should be done in hospitals of similar settings to assess the cost variance, and expand use of costing information in decision making.