

# Assessing the Physical and Financial Progress of the Medical Equipment Procurement Process – A Study at the Regional Directorate of Health Services (RDHS) in Gampaha, Sri Lanka

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**Abstract**-Procedures and systems related to the procurement process does differ based on different countries, governments, sectors, organisations etc. but general consensus is that, the adopted process involves three (3) main stages identified as planning, purchasing and contract management. In the Sri Lankan health sector too, these key stages are prevalent in the procurement of medical equipment however, various concerns have arisen with regard to the timeliness of the current processes. The objective of this study, was to assess the physical and financial progress of the medical equipment procurement process with respect to the date of delivery in each year, at the Regional Directorate of Health Services (RDHS) in Gampaha, Sri Lanka. This was a descriptive study done based on information gathered for the period of 2014/2015 related to the procurement activities of medical equipment at RDHS, Gampaha which, is the main health service provider for the second highest populated district in Sri Lanka. For this study, procurement records of medical equipment purchased in years 2014 and 2015 using any type of funding source were analysed, centred on three (3) fact sheets used to gather necessary quantitative data. A total of 78 state sector health institutions are under the purview of RDHS, Gampaha and the officers at the Planning unit, Biomedical Engineering unit and Accounts branch were involved in buying the required medical equipment. Based on a total sample of 245 equipment categories a sample of 243 records were identified where different funding sources had been used for procurement and data was collected from the three (3) main units. This study revealed that, physical progress achieved starting from the month of June based on the type of funding used during the period of 2014/2015 was more than 50% and gradual progression was seen since September until the end of the period under review, with regard to procurement projects funded by Provincial Specific Development Grant (PSDG) and Health Sector Development (HSDP) funds. Analysis of the financial progress based on a similar scenario for the same period indicated that, in the month of November projects funded by Health Sector Development (HSDP) resources showed a progress of 54.8% while, line ministry funded procurement projects indicated the least progress of 1.6%. It can be concluded that, stringent government

guidelines and greater cohesiveness among the officials handling the procurement process, would enhance the efficiency and timeliness in purchasing required medical equipment by the state health sector institutions, in Sri Lanka.

**Index Terms**- Health, Medical equipment, Procurement, Progress, Regional

## I. INTRODUCTION

The “building blocks” of the health system framework as described by the World Health Organization (WHO) consists of six elements [1] and one such key element is technology and logistic supply. In a more descriptive form, the definition of the word technology from a healthcare perspective, encompasses medical devices as well, apart from other relevant aspects. Furthermore, medical equipment which, is identified under the category of medical devices [1], is an integral component in providing quality healthcare facilities for patients. Substantial cost [2] is incurred in the procurement of medical equipment which, has a significant impact in the effectiveness and safety aspects of the healthcare services provided by health institutions. Timeliness is a key aspect in the purchasing process of critical equipment in the health sector and it has been identified that, certain causative factors tend to prolong the lead time in receiving ordered goods. Some of these reasons include [3] issues pertinent to planning of required material, delayed receipt of technical evaluation reports, lack of procurement skills, weak supplier relationship and late acknowledgment [4] of already prepared estimates. Considering the magnitude of goods, services and capital assets purchased by government institutions, it is imperative for such public procurement activities to be handled by, well trained [5] and competent persons. The procurement processes in the health sector differs based on each country’s government policies. Sri Lanka’s public procurement system, is based on a set of comprehensive national procurement guidelines introduced in 2006 by the National Procurement Agency of the Ministry of Finance. Enacted by law, these guidelines and

manuals are applicable to all public procurement processes happening at central, provincial, regional and agency level in all government as well as semi government organisations. In Sri Lanka the Biomedical Engineering division of the Ministry of Health is accountable for the procurement, maintenance and management of medical equipment required by most of the government hospitals while the Provincial Councils also get involved in this process [6], when needed.

The procurement methods adopted in general by the provincial institutions are identified as National Competitive Bidding (NBC), limited national competitive bidding, shopping and repeat ordering [7]. There are key stakeholders and different committees which, get involved at provincial and regional level when procuring medical equipment. In this regard, the Procurement Committee (PC) should consist of a minimum number of three participants while different types of committees can be formed at departmental, ministerial and cabinet level based on the type of the government organisation and permissible monetary limit. Additionally, the Technical Evaluation Committee (TEC) which, has been set up for the evaluation of goods and services and is jointly responsible [8] with the PC in facilitating the procurement process. The formal approval of a minimum of three committee members is needed, when evaluating purchases below the threshold of (Sri Lankan Rupees) LKR 10 million. Tenders under this process are awarded only to registered suppliers with the relevant procurement entity and an invitation, is extended to the prospective bidders (or suppliers) through a newspaper advertisement [6] published well in advance or by way of a formal invite. The implementation of the Provincial Councils Act in 1989 devolved the state sector health services in Sri Lanka and accordingly the Regional Directorate of Health Services (RDHS) functions under the administrative purview of the Provincial Governor, Chief Secretary, Provincial Health Ministry and Provincial Director of Health Services [9] respectively.

## 2. OBJECTIVES

The objective of this study, was to assess the physical and financial progress of the medical equipment procurement process with respect to the date of delivery in each year, at the Regional Directorate of Health Services (RDHS) in Gampaha, Sri Lanka.

## 3. METHODOLOGY

### 3.1. Study Area

This was a descriptive study done on health institutions, to identify the various factors affecting the timeliness of the procurement process of selected categories of medical equipment, in state sector hospitals in Sri Lanka. Regional Directorate of Health Services Gampaha, located in the Western Province of Sri Lanka was selected as the study setting, for the period of 2014/2015. Recognised as the second highest populated district [10] in Sri Lanka with a population of 2.3 million, the RDHS Gampaha is considered as the main health service provider for the district and there is a massive demand for medical equipment by the preventive and curative health institutions in the district. There are seventy-eight (78) state sector health institutions in the district of Gampaha [11]

consisting of two (2) District General Hospitals (DHSs), three (3) Base Hospitals (BHs), eleven (11) Divisional Hospitals (DHs), forty-six (46) Preliminary Care Units (PCUs) and sixteen (16) Medical Officers of Health (MOHs).

The Planning unit, Biomedical Engineering unit and Accounts branch at RDHS, Gampaha gets involved, in the procurement process of medical equipment as shown in Figure 1 and the relevant staff have been assigned specific job roles to ensure completion of the procedures. Further, the purchasing process of the required equipment is done over a period of two (2) consecutive years and it usually starts with the requests being made in the month of March, of the current year. With these requests being prioritised and incorporated in the annual plans, the funding method for procurement is decided and sent for approval to the relevant authorities. Usually there are two (2) definite funding sources for health institutions in the Western province of Sri Lanka and these are known as Provincial Specific Development Grant (PSDG) and Provincial Development Grant (PDG). Additionally, commencing from year 2014 a special funding allocation has been arranged by the World Bank to support the provincial health sector and it is identified as the Health Sector Development (HSDP) grant. Further, line ministry funding and decentralised budgetary allocations (i.e. other funds) are also provided for procurement purposes but these sources are random and uncertain. Since year 2012, a substantial allocation of capital (funding), has been allocated to the RDHS, Gampaha, Sri Lanka for procurement of medical equipment while 32.06% had been assigned for year 2014 and 43.28% for year 2015.

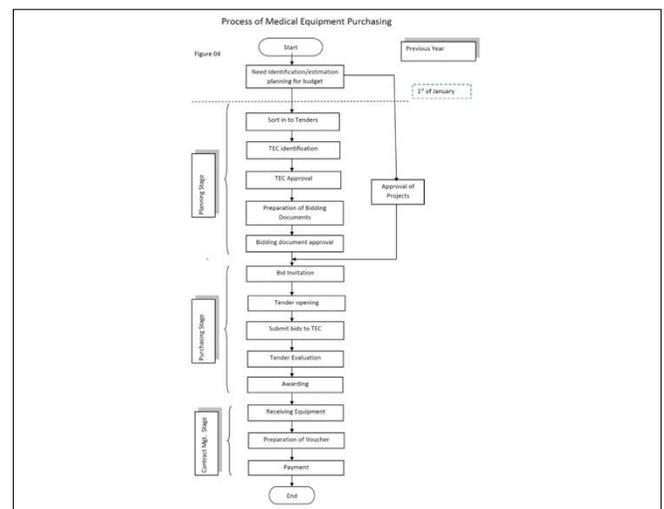


Fig 1. Medical Equipment Procurement Process Map

This study was carried out over a period of nine (9) months starting from November 2015 while the data was collected during the period of April to June 2016. Furthermore, as an initial step retrospective gathering of secondary data was carried out based on available records. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka. To comply with administrative requirements formal written permission was

obtained from the Provincial Director of Health Services, Western province and RDHS, Gampaha, Sri Lanka.

To find explanations to the identified key objective and sub objectives of this research, the overall study population consisted of two components i.e. (1) stakeholders of the procurement process and (2) records of medical equipment procured in years 2014 and 2015. To study the timeliness of the procurement process, medical records indicating details of medical equipment purchased by RDHS Gampaha using any type of funding source in 2014 and 2015, was considered. Medical records consisting a total number of two hundred and forty-three (243) equipment categories were identified based on two hundred and forty-five (245) equipment types purchased in 2014 and 2015, which provided a 99% realisation rate in required gen.

### 3.2. Study Instruments

Pre tested, structured fact sheets were used to scrutinise the medical equipment procurement records of years 2014 and 2015 and vital quantitative data was collected for analysis. The secondary data was collected from the Planning unit (i.e. information relevant to annual plan budget and progress), Accounts branch (i.e. bill settlement details), Bio medical Engineering unit (i.e. tender details) and Biomedical stores (i.e. equipment receiving and distribution details) of the RDHS in Gampaha, Sri Lanka.

### 3.3. Study Instruments

A particular tender comprises of several different categories of medical equipment and accordingly, each such category was considered as “one study unit”, irrespective of the quantity of equipment included. Further, a particular selected category for data collection purposes did indicate the same date of procurement while, according to the location (i.e. which unit/ section of the particular health institution) of use, nine (9) sub categories were also identified. Information revealed that, four (4) types of funding sources have been used which, included (1) provincial grants (i.e. PDG and PSDG), (2) foreign funding (i.e. HSDP), (3) line ministry funding and (4) special funding or criteria based funding. Three (3) methods of purchasing medical equipment documented as (1) open tenders/ National Competitive Bidding (NCB), (2) shopping and (3) limited quotation were adopted during years 2014 and 2015, by the staff at RDHS, Gampaha, Sri Lanka.

### 3.4. Measures

For operational definition purposes procurement year was considered as the “current year” and the previous year was not considered since the time frame remained same, with regard to identification of equipment purchasing and making annual plans. It should be noted that, this premise does not have any effect on the monitoring and evaluation phases of the procurement process for both years. Table 1 defines the three (3) main stages of planning, purchasing and contract management, along with the sub stages and the time period of operationalization relevant to the procurement procedure adopted by RDHS, Gampaha.

TABLE I: Identified stages of the procurement process of medical equipment and operationalization of time taken for each sub stage

Stage	Operationalization	
	Date of commencement	Date of completion
<b>Planning stage</b>		
<i>(Defined as the time taken from 1<sup>st</sup> of January of the current year to the date of the bidding document approved by the Tender board)</i>		
Approval of project	1 <sup>st</sup> of January	Date of project approval
Sorting into tenders	1 <sup>st</sup> of January	Date of finalising into tenders
TEC identification	Date of finalising into tenders	Date of TEC nomination
TEC approval	Date of TEC nomination	Approval date of TEC by PDHS
Bidding document preparation	Approval date of TEC by PDHS	Date of completion of preparation of bidding documents
Bidding document approval	Date of completion of preparation of bidding documents	Tender board approval for document
Approval of project	1 <sup>st</sup> of January	Date of project approval
<b>Purchasing stage</b>		
<i>(Defined as the time taken from the date of bidding document approval to the date of awarding the contract to the supplier)</i>		
Bid invitation	Tender board approval for document	Calling for bids
Tender opening	Calling for bids	Opening of tenders
Submit bids to TEC	Opening of tenders	Receiving bids by TEC
Tender evaluation	Receiving bids	Finish evaluation
Awarding Bid invitation	Finish evaluation	Awarding the contract
	Tender board approval for document	Calling for bids
<b>Contract Management stage</b>		
<i>(Defined as the time taken from awarding the contract to the supplier to the date of receiving medical equipment)</i>		
Receiving equipment	Awarding the contract	Receipt of equipment
Preparation of voucher	Receipt of equipment	Preparation of voucher
Payment	Preparation of voucher	Payments
Receiving equipment	Awarding the contract	Receipt of equipment

Procurement of medical equipment is monitored by the Western provincial health ministry as per two key pre-determined indicators identified as (1) physical progress and (2) financial progress.

Table 2 describes the assessment criteria of measuring the progress adopted by the Western province, Sri Lanka with regard to procurement

TABLE II: Assessment criteria of Physical and Financial progress of projects (supplies) in the Western province

Code	Percentage %	Physical progress detail	Financial progress
O	-	Not commenced	<b>Amount of money spent x100%</b> <b>Amount of money allocated</b>
A	0-20	Need identification/Estimating/ Approval	
B	21-50	Tender calling/ Selecting	
C	51-70	Order placing	
D	71-99	Receiving goods	
H	100	Received but not paid	
I	100	Payments completed	
Q	-	Problem arisen	<b>Problem arisen</b>

#### 4. RESULTS AND DISCUSSION

Purchasing of selected categories of medical equipment for the period of 2014/15 was analysed, based on the funding sources and were identified on a calendar year basis. Information relevant to year 2014, indicated a total number of 113 medical equipment had been distributed and a quantity of 130 in year 2015, as the total for years 2014/15 amounted to 243. HSDP has been the main funding source for the procurements, with 41.6% (n=47) of the funds used in year 2014 and 54.6% (n=71) used in 2015. Relating to the allocation of funds for distribution of “selected medical equipment based on the source of funding” it revealed that, the total allocation for year 2014 was LKR 95.02 million and for 2015 it was LKR 264.85 million, with the total amounting to LKR 359.87 million. The allocation of funds indicated that, HSDP has funded 49.5% (LKR 189.02 million) in year 2015 and has been the largest funding source (60.9%) in 2014 as well. In addition, the allocation based on the type of funding source for the period under review was 29 tenders in 2014 and 39 tenders in 2015, with a total of 68 for years 2014/15. During this period one third (n=22) of the total tenders were funded by PDG. A total number 2159 equipment had been purchased during the period of analysis, with the highest amount

of 1350 procured in year 2015. Major funding source had been HSDP (n=1331) followed by PDG (n=594). Based on the type of funding, in year 2014 the main method adopted (94.7%) for tendering had been NCB (n=107) and HSDP was the key funding source with an allocation of 41.6% (n=47). A similar outcome was seen in year 2015 as well, with the main implemented mode of tendering being NCB (83.1%) to procure a quantity of 108 medical equipment and the major funding source had been HSDP (54.6%) to procure a quantity of 71 needed equipment. needed

TABLE III: Physical progress according to the funding source for the period of year 2014/2015

Funding source	Year 2014 & 2015							
	June	July	Aug	Sep	Oct	Nov	Dec	
PDG	23.4 %	31.9 %	41.6 %	51.1 %	58.1 %	71.5 %	100.0 %	0%
PSDG	39.9 %	48.7 %	62.7 %	73.0 %	82.4 %	87.4 %	100.0 %	0%
HSDP	40.6 %	44.0 %	64.8 %	77.2 %	81.7 %	90.8 %	100.0 %	0%
Line Ministry	2.9 %	5.3 %	13.4 %	18.1 %	32.4 %	62.1 %	100.0 %	0%
Other	18.2 %	27.9 %	35.4 %	52.5 %	74.2 %	76.3 %	100.0 %	0%
Total	25.0 %	31.5 %	43.6 %	54.4 %	65.7 %	77.6 %	100.0 %	0%

Analysing physical progress based on the type of funding used during the period of 2014/2015 commencing the month of June showed that, more than 50% gradual progress has been achieved since September, with regard to projects funded by PSDG and HSDP. However, as shown in table III, Figure 2, the physical progress achieved on projects funded by line ministry remained very much less than 50% from June to October. Overall projects

procured by funding sources such as PDG, PSDG (provincial grants) and HSDP showed a physical progress of 25% and more in the month of June, during which period the tenders were being called. Thereafter, gradual progression indicated 100% achievement by December.

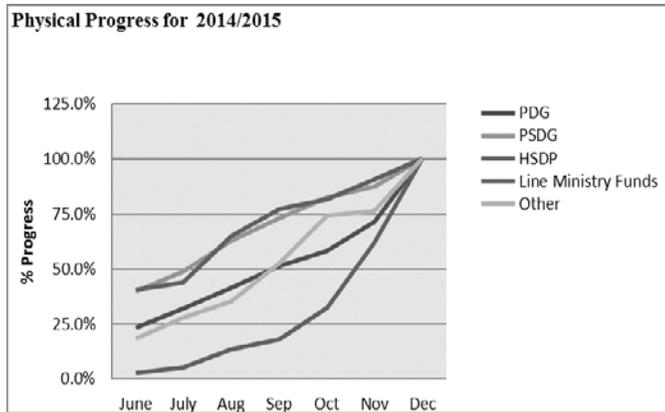


Fig 2. Analysis of Physical Progress 2014/2015

The financial progress analysis, according to the funding source for the same period in 2014/2015 revealed that, in the month of November HSDP funded projects showed a progress of 54.8% while projects funded by line ministry indicated the least progress with 1.6%. However, at the end of the period under review (i.e. December), same projects showed a significant progress of 89.5% as shown in table IV, Figure 3 but failed to achieve 100%, as achieved by all other projects funded by other funding sources. The underachievement has been attributed to the suppliers' delay in dispatching the ordered equipment.

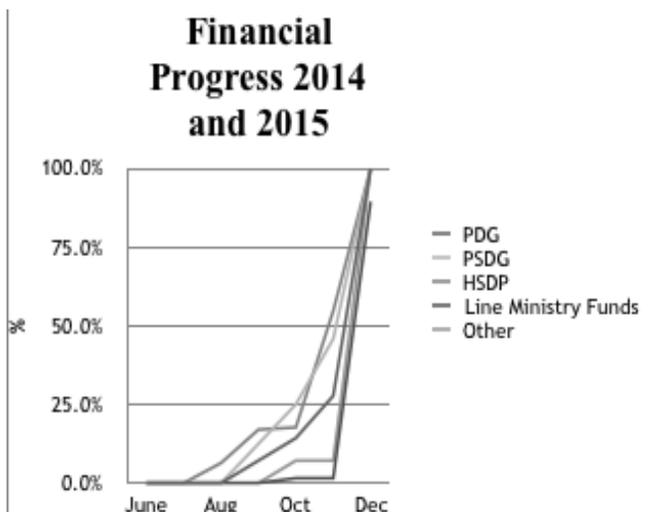


Fig 3. Analysis of Financial Progress 2014/2015

TABLE IV: Financial progress according to the funding source for the period of year 2014/2015

Year 2014 & 2015							
Funding source	June	July	Aug	September	Oct	Nov	Dec
PDG	0.0%	0.0%	0.0%	7.2%	14.3%	27.4%	100.0%
PSDG	0.0%	0.0%	0.0%	12.5%	25.0%	45.0%	100.0%
HSDP	0.0%	0.0%	6.4%	17.0%	17.0%	54.0%	100.0%
Line Ministry Funds	0.0%	0.0%	0.0%	0.0%	1.6%	1.6%	89.5%
Other	0.0%	0.0%	0.0%	0.0%	7.2%	7.2%	100.0%
<b>Total</b>	<b>0.0%</b>	<b>0.0%</b>	<b>1.3%</b>	<b>7.3%</b>	<b>13.1%</b>	<b>27.4%</b>	<b>97.9%</b>

Based on all funding sources overall rapid progress was seen from November (27.4%) to December (97.9%) which, also shows the rapidity or the hurriedness to finish the projects on time, to complete the procurement process. Such a situation, may well lead to unexpected risks and susceptibilities in the procurement process, which could have an impact on the quality of the purchased medical equipment.

### 5. CONCLUSION

This study revealed various factors which, have had an impact on the orderliness and timeliness of the procurement process of medical equipment at the RDHS, Gampaha, Sri Lanka in years 2014 and 2015 which, in turn had an impact on the physical and financial progress of the overall process completion. The study revealed that, the procurement process of the RDHS, Gampaha, Sri Lanka has been mainly impacted by three sub stages namely (1) project approval stage (2) equipment receiving stage and (3) technical evaluation stage. The most affected was the planning stage in the project approval phase, as a longer duration of time has been taken to complete the required tasks. Stringent government regulations introduced by policy makers could influence in solving the current issues and thereby, expedite the overall process. Active management and monitoring of the

affected sub stages would help to improve the timeliness of the procurement process. Furthermore, resolving other problems such as flaws in specifications and tender documentation preparation, TEC nomination disputes and ethical concerns etc. would also pave the way, for the officers to complete the procurement process on time. At RDHS Gampaha, Sri Lanka the progress reports are used as monitoring tools which, supports the decision making of the experts involved in this process and also assist them in making recommendations for further improvement. The respondents of this study representing different stakeholder groups, provided their valued recommendations and some of them were (1) expeditious and early approval of projects, (2) identifying different criteria to develop guidelines for equipment prioritisation and (3) introduction of a standard list of equipment for each category of health institutions in the Western province of Sri Lanka.

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