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# Assessing pharmaceutical commodity supply chain management challenges in Busia County

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# ASSESSING PHARMACEUTICAL COMMODITY SUPPLY CHAIN MANAGEMENT CHALLENGES IN BUSIA COUNTY

**By**

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**Declaration**

I declare that this MBA project has not been previously submitted and approved for the award of a degree by this or any other university and does not contain material previously published or written by any person except where due reference is made in the thesis itself.

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Date:

**Abstract**

Pharmaceuticals together with salaries consume 60-80% of the health budgets of most counties in Kenya, therefore improving performance of the pharmaceutical commodity supply chain is one of the key activities aimed at improving health systems in Kenya. An efficient supply chain system reduces wastage and ensures availability of and accessibility to essential medicines, namely the right product in the right quality, in the right condition, at the right place, at the right time and at the right cost (the six rights of logistics).

The purpose of this study was to evaluate the pharmaceutical commodities supply chain management challenges that health care workers of Busia County encounter while delivering services to the population and use the information to suggest improvements on the pharmaceutical supply chain performance. The study objectives were a) to determine how effective the Logistics Management Information System in Busia county is in serving her population needs b) to determine if funds allocated for procurement of medicines are efficiently utilized and c) to determine whether the staff using the pharmaceutical Logistics Management Information System and others in the supply management system are well trained on supply chain management and are of the right number.

The study sites for this research were five facilities in each of the seven sub-counties in Busia County, whereby a sub-county hospital, a high volume health centre, a high volume and a low volume dispensary as well as one faith-based dispensary were targeted for this study. Main areas of research were the health facility pharmacy department, the comprehensive care clinic pharmacy, the pharmacy and county stores respectively.

Cross-sectional descriptive study design was used. Instruments used were structured questionnaires, always, better and control analysis and also vital, essential and non-essential analysis respectively. The main findings were that most of the facilities experienced long lead time and delays in delivery of essential supplies, funds for procurement of medicines were well utilized but facility staffing levels were inadequate. The recommendations from this study are that, a) the county government should employ and train more health workers to support pharmaceutical commodity supply chain management b) the County Government should adopt efficient and effective supply chain management system, the Logistics Management Information System, so as to minimize waste and inefficiencies of county procured pharmaceutical commodities.

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## Table of Contents

**Table of Figures**

## List of Tables

**Acronyms**

| | |
|---|---|
| WHO | World Health Organization |
| LMIS | Logistics Management Information System |
| MSH | Management Science for Health |
| SDP | Service Delivery Point |
| SDG | Sustainable Development Goal |
| HR | Human Resource |
| HRH | Human Resource for Health |
| FY | Financial Year |
| KES | Kenya Shillings |
| KEMSA | Kenya Medical Supplies Authority |
| MEDS | Mission for Essential Drug Supplies |
| USAID | United States Agency for International Development |
| SCM | Supply Chain Management |
| SCMS | Supply Chain Management System |
| MOH | Ministry of Health |
| SCH | Sub county Hospital |

**Definition of Key Terms**

**Stock-outs:** Situation where the demand of a product exceeds its supply due to the product not being available in the current inventory

**Lead time:** Time that elapses between when items are ordered and when they are received from the supplier

**ABC Classification:** A method of analysis for comparison and determination of medicines cost in an essential medicines list

**VEN Classification:** A method of analysis that categorizes medicines according to their clinical importance

# CHAPTER ONE: INTRODUCTION

## 1.1 Background

Health is a fundamental right according to the Constitution of Kenya. The Constitution states that every Kenyan citizen has the right to the highest attainable standard of health and mandates the state to take policy, legislative, and other measures that include enforcement of laws and regulations and setting of standards so as to progressively achieve the realization of rights enclosed under Article 43, which include the right to health (The constitution of Kenya, 2010).

The constitution also states that health is a devolved function and therefore assigned the role of delivering health services to the counties. Schedule 4 part 2 of the constitution on allocation of roles between National and County governments mandates the County Governments to provide and manage county health services which include ambulance services, county health pharmacies and facilities, and also primary health care promotion to all her citizens. The National Government on the other hand maintained the role of formulation of health policies and standards and management of both health workers internship program and national referral health facilities (The constitution of Kenya, 2010)

A health system that functions well is one that is responsive to the expectations and needs of a population through promoting the health status of members of the community, protecting the population against financial repercussions of ill-health and enabling more access to people-centered care for her population (World Health Organization, n.d.). In 2007 the World Health Organization came up with a health systems building blocks framework with the aim of defining what makes up health systems strengthening and what a health system is. The health system framework has six core components namely: quality service delivery, capable and adequate health workforce, reliable information system, access to medicines, vaccines and medical products, sustainable health financing and good leadership and governance (World Health Organization, 2010). Good service delivery provides for quality health interventions that are safe and effective without wastage of resources, to the needy population whereas a capable health workforce is one that responds to the needs of the population and gives good health outcomes even with the little resources available to it.

A reliable health information system is one that allows for efficient collection of reliable data, analysis and use of information for decision making. Equitable access to vaccines, medicines and medical products that are of good quality, efficacious and affordable is made possible by a functioning health system. A sustainable financing system is one that enables healthcare funding by enabling access to services and financial protection from catastrophic events and impoverishment to poor households. Leadership and governance ensure accountability and stewardship of health resources. Any activity that supports one or all of these pillars is called health systems strengthening (World Health Organization, 2007).

The WHO health system pillars are interconnected and therefore cannot function well if the system lacks capabilities in certain areas. For instance, if one of the pillars for one reason or another is non-functional or is lacking, then the system will be non-responsive to the needs of the population since the system pillars either directly or indirectly affect each other as seen from a study done in Zambia (Mutale *et al*., 2013).

The barrier to achieving good health outcomes in low-income countries is non-functional health systems (Mutale *et al*., 2013). In Kenya for example devolution of health services to county level was meant to bring services closer to the people and to improve efficiency in health service delivery. However, transfer of devolved health sector functions was done much faster than most counties were ready for due to the political context in Kenya at that time (B. Tsofa, 2016). Devolution was done at a time when county governments had not put up their own organizational structures in place and had not built capacity for those structures to manage their functions. This ended up causing major disruptions and challenges in the health sector service delivery (Benjamin Tsofa, Goodman, Gilson, & Molyneux, 2017) that resulted in non-functional health systems, challenges that are still being faced by counties to date. From a study done in the Philippines by Herrera & Roman (2010) the challenges faced by devolved health systems due to non-functional health systems are: detachment of national government from county health matters, inadequate health workforce, poor leadership, lack of accountability, ineffective commodity supply chain for medicines and medical supplies, brought about by widespread corruption, inadequate funding and inefficient information system.

In general one of the major challenges faced at both national and county level is funding health care. The Kenyan budget for FY 2016/2017 allocated shillings Kes 60.3 billion for preventive and

curative health services to the health docket out of the whole Kes 2,264.8 billion country's budget (The National Treasury, 2016). The 60.3 billion budgetary allocation for health amounts to only 2.7% of the overall budget, which is nowhere near the Abuja declaration, where a target of allocating at least 15% of the country's annual budget to improve the health sector was set by African Union countries in 2001 (WHO, 2011). The 2.7% allocation for the health sector means the health department is financially constrained and that it is also competing with other government priorities for resources. All in all the 2.7% health department allocation needs to be utilized efficiently.

In the same FY 2016/2017, Busia County received Kes 6,069.8 million from the National Government of which Kes 1,716.7 million was allocated to the health sector (Busia County Treasury, 2016). The Kes 1,716.7 million accounts for only 3.5 % of her overall budget which just like the national budget is a very minimal allocation to a very vital sector like health. Most counties including Busia spend about 60-70% of their county budget on salaries and wages and purchase of medical products, leaving 30% to cater for other county needs like health service delivery as calculated from the FY 2016/2017 Busia County Budget. The county spent approximately 68% on salaries and wages and purchase of medicines.

A functional health care system must have qualified personnel and must enable access to health services for her population. Access to health care including essential medicines is a fundamental right according to the Kenyan constitution. WHO defines essential medicines as "those medicines that satisfy the priority health care needs of the population and are therefore selected with consideration to their relevance to public health, evidence on efficacy and safety and comparative cost-effectiveness."

To improve access to health services there must be a functional pharmaceutical supply chain which should within the context of a functioning health system provide medicines at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price an individual and the community can afford (World Health Organization). To realize this objective the pharmaceutical supply chain must be well funded so as to make it sustainable.

Delivery of medicines at service delivery point is made possible through an efficient supply chain. Ram Ganeshan and Terry P. Harrison (1995) defined supply chain as a network of facilities and distribution options that perform the functions of procurement of materials, the transformation of

these materials into intermediate and finished products and the distribution of these finished products to customers. A typical pharmaceutical supply chain consists of manufacturing partners, warehouses, intermediaries, all hospital levels (Nilay Shah, 2004) and patients.

Supply chain management is the integration of business processes in the provision of valuable products, services and information to customers and stakeholders through suppliers (Lambert *et al*. 2006). The Council of Supply Chain Management defines it as the planning and management of all activities involved in sourcing, procurement, manufacturing, and logistics (Wisner, Tan, Leong, 2012). It also includes linking and cooperation with suppliers, middlemen, third-party service providers, and consumers.

### 1.1.1 The Pharmaceutical Management Framework

A lot of emphasis on improving access to essential medicines is put on better pharmaceutical management through four basic functions: selection, procurement, distribution and use. Selection depends on prevalent disease burdens, treatment guidelines or protocols, health facility levels, knowledge and experience of health personnel and financial resources available. Procurement involves medicine quantification process, choice of appropriate procurement methods, tender management, setting up legal and binding agreements with suppliers and assuring the public of the good quality of pharmaceuticals Distribution includes clearance of customs at ports and airports, proper commodity inventory management and delivery of drugs to warehouses and to service delivery points. Use comprises diagnosing, prescribing, dispensing and rational medicine use by the patient (Management Science for Health, 2010).

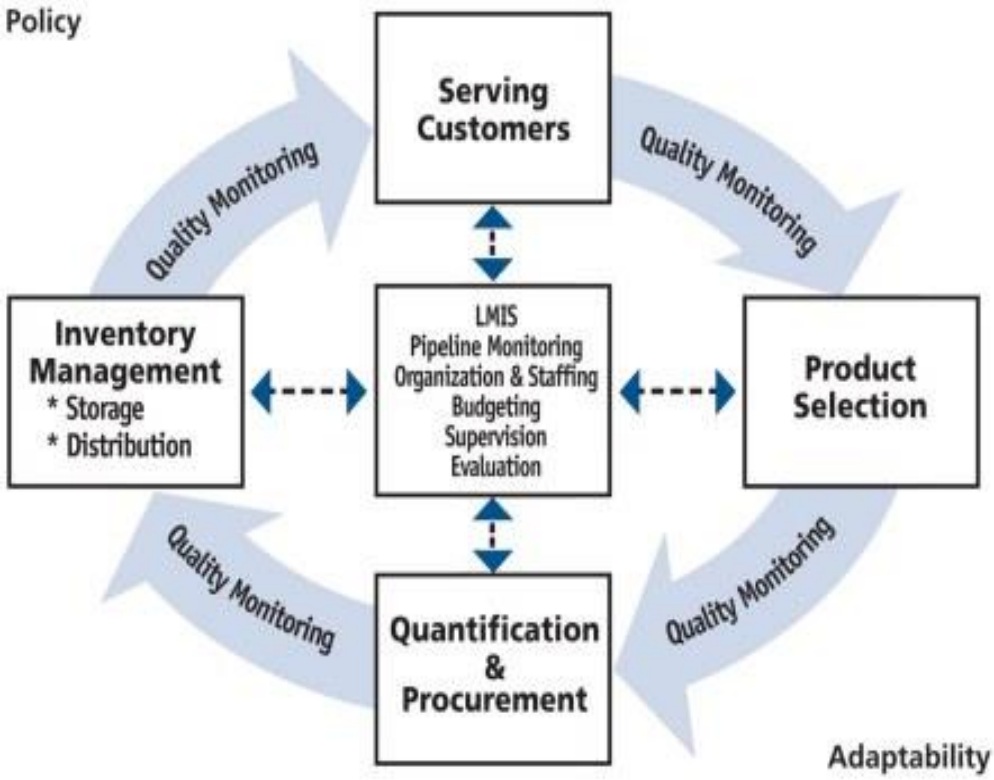
Each major function in the pharmaceutical management framework builds on the previous functions and logically leads to the next. A malfunction in one part of the framework will lead to collapse of the entire pharmaceutical management process, which would bring about a rise in the cost of medicines, commodity stock-outs in health facilities and increased patient suffering due to high cost they will have to incur in order to access healthcare (Management Science for Health, 2012).

The entire pharmaceutical management framework depends on the organization, sustainable funding, information and human resource management as its fundamental management support system. The framework also depends on policies, laws, and regulations which depend on strong

leadership and governance in order to build and strengthen public commitment to essential medicine supply by the government (Management Science for Health, 2010).

### 1.1.2 The Pharmaceutical Logistics Cycle

In terms of medicines, patients look for the right goods, in the right quantities, in the right condition, delivered to the right place, at the right time for the right cost (the six rights of logistics)(USAID, 2011). But to get the six rights right the logistics cycle has to be efficient.




**Source: Management Science for Health (2012)**

**Figure 1: Pharmaceutical Logistics Cycle**

Logistics cycle is the correlation between the activities in a logistics system, which are: serving customers, product selection, quantification and procurement, inventory management, storage, and distribution. Other activities include Logistics management information systems (LMIS), pipeline monitoring, organization and staffing, budgeting, supervision, evaluation, quality monitoring, policy and adaptability of the system. The repetitive nature of activities in the cycle shows that various elements of the cycle are interdependent on each other (USAID, 2011).

Management support functions represented at the center of the cycle inform and influence the functioning of the rest of the elements around the cycle. LMIS collects data about medicines consumption and stocks available, information which is used for decision making for activities such as commodity resupply and redistribution for health facilities. (USAID, 2011).

Quality monitoring ensures a systematic and functional logistics cycle in terms of quality of both product and work, the policy will involve government directives and approaches such as budgeting policies that would affect all elements of the logistics system. In terms of adaptability, logistics systems must be designed to be changeable and adjustable to constantly change circumstances such as financing policies by the government and donors, government regulations and logistic activities (USAID, 2011).

Logistics management consists of organizing, implementing and managing the systematic and effective flow of raw materials, finished products, and information from point of origin to the consumption point with the aim of satisfying the customer. It includes both inbound (process of receiving, storing and distributing raw materials for use in production) and outbound (covers movement and storage of products and how related information flows from end of production line point to consumption point), transportation management, warehousing, order fulfilment, inventory management and third-party logistics providers (providers of outsourced logistics services).

The pharmaceutical pipeline includes storage facilities (port facilities, warehouses, service delivery points) and transportation network connection (transport means) through which supplies move from manufacturer to the consumer. The pipeline consists of tanks (warehouses) that store and pipes (transportation links) that move the product to the home (service delivery point). Transportation means in remote areas may include boats, vehicles, animal driven carts, motorbikes and even bicycles (USAID, 2011**)**.

### 1.1.3 Logistics Management Information System (LMIS)

The LMIS is a system that enables managers to locate any obstacles in the supply channel and ensure a continuous supply of medicines. It also enables commodity managers to collect and manage the information needed for making informed decisions concerning commodity management (Omo-Emmanuel & Chinedum, 2017), since the system tracks the flow of supplies and manages data on quantities of medicines or medical supplies available in an SDP at a particular

time, reports on quantities consumed as well as quantities of commodities needed for resupply and inventory losses due to expires and damages (USAID, 2011).

The data managed through LMIS is also used at the national level for determining consumption levels, so as to enable facilitation of planning, allocation, an approximation of needed commodity quantities and procurement (Omo-Emmanuel & Chinedum, 2017) of needed commodities especially donor-funded ones.

The Logistics Management Information System is a system that consists of reports and records. It is used to collect, organize and present needed information that is useful in not only making informed decisions by decision makers but will also lead to improved customer service. LMIS can be automated (computers, mobile phones, internet) or manual (Mutugi, 2014). An efficient LMIS minimizes chances of experiencing commodity stock outs and avoidable waste of resources that is brought about by breakages, theft, and expiration of medicines and medical products (USAID, 2010).

### 1.1.4 Human Resource for Health (HRH)

For FY 2016/2017 Busia County spent Kes 340 million on the purchase of essential medical supplies for curative and preventive health services and Kes 833 million on human resource for health from her Ksh 6 Billion budget (Busia County Treasury, 2016). Medical products are expensive and they consume a lot of money (Management Science for Health, 2010) therefore developing the capacity for HRH to support health service delivery is very important. However in most countries, health workforce planning and management are hindered by incorrect data on HRH and as a result, unproductive policies for the sector are made, policies which do not back and even lack the capacity to manage the health workforce (World Health Organization, Western Pacific Region, 2006).

Health workforce in different countries in the world differ in numbers due to factors like the region's prevailing economic, social and political situation (World Health Organization, Western Pacific Region, 2006), imbalances in skill mix, migration of health workers from rural to urban areas and across borders and minimal production capacity (World Health Organization, 2010). Factors that influence migration of health personnel and as a result hamper health system performance include: workload that staff cannot manage with brought about by understaffing, safety of the staff, poor working environments, inadequate infrastructure and resources to perform

duties optimally, lack of career prospects, poor remuneration, difficult living conditions, lack of career prospects and inadequate training opportunities (Moosa et al., 2014).

A 2013 WHO report estimated a global shortage of healthcare workers at 7.2 million with the possibility of increasing to 12.9 million by the year 2035 (Global Health Workforce Alliance, WHO, 2013). This portrays the critical need for employment of more healthcare workers so as to be able to gain an adequate coverage for essential health interventions for needy populations.

The health workforce according to WHO can be defined as all people involved in actions whose primary purpose is to improve health. These human resources include clinical staff such as physicians, nurses, pharmacists, dentists as well as management and support staff, who are those who do not deliver services directly but are essential to the performance of health systems, such as managers and ambulance drivers (World Health Organization, 2010).

The formulation of national policies in pursuit of HRH development objective requires sound information and evidence. However in Kenya this might not be possible because the report on training needs assessment of Kenyan health workforce, published in 2015 focused on medical officers and specialists, clinical officers and clinical officer specialists, nursing officers and nurse specialists but left out the Pharmacy and other departments that are crucial in health service delivery (Ministry of Health, 2015). Pharmacy department manages medical products and some vaccines, which forms part of the WHO health pillars.

### 1.1.5. The Context of Busia County

Busia County is one of the four counties that form western region. The county is divided into seven sub-counties namely: Bunyala, Matayos, Butula, Nambale, Samia, Teso North and Teso South. The county has a total of 115 health facilities, majority of which are sponsored by the county government, which it procures medicines and medical products for. Private and faith-based facilities represent 15% and 13% of the total health facilities in the county.

Busia is one of the counties that has the largest number of donors who support many health activities on the ground (Busia County Health Profile, 2016). The county has 1098 health care workers, most of whom manage the supply chain at different facility levels (Ministry of Health, Busia County, 2017). At the county level, the County Pharmacist and the County chief nurse are in charge of coordinating supply chain management for both pharmaceuticals and non-

pharmaceuticals respectively. At the sub-county level, it is done by the sub-county pharmacists and the nursing officer in charges as well as the supply chain officers and at levels 3 and 2 facilities the process is managed by nurses and pharmaceutical technologists.

The current situation in Busia County is that most of the staff are not conversant with quantification process due to lack of training in that aspect. Quantification is done at county and sub-county levels but using old data and by making many assumptions and approximations since the exercise has only ever been done twice post-devolution, with support from partners. Centralized bulk procurement of medicines is done from, Mission for Essential Drugs and Supply (MEDS) and Kenya Medical Supply Authority (KEMSA) pre-qualified suppliers who were recommended by the central government. Procurement is also done from local suppliers (Health Sector Function Assignment and Competency Team (FACT), 2013), most of whom lack the capacity to meet the high volume of distribution for the county hospitals, leading to frequent drug stock-outs being experienced. Pipeline challenges that are experienced in the county are leakages, damages, pilferage of drugs and very long lead times. Management of medicines and medical products is done by the pharmacy and nursing departments due to a shortage of pharmacy personnel in lower level facilities. Training on supply chain management are done on need the only basis and the training content is usually specific to various cadres. The training are always done with support from partners.

### 1.2 Statement of the problem

Devolution of health services mandated county governments to ensure that medicines and medical products are available in health facilities at all times and are affordable to their citizens. However, this has not been the case in Busia County. Inadequate funding for health care, lengthy procurement process for health commodities, commodity stock-outs in health facilities and lack of capacity to forecast, plan and determine county health care needs that is brought about by poor logistics management are some of the challenges that have been experienced by healthcare workers while trying to offer services to the population, challenges that have in fact affected supply chain performance.

Inadequate funding has also led to inadequate staffing hence the lack of qualified workforce to handle the supply chain efficiently and effectively since the county is unable or unwilling to hire adequate pharmacy personnel to manage commodities and also to train them on up to date

information concerning pharmaceutical commodities. Medicines and medical products are a vital component of a functional health system because they save lives and promote the health of the population (Management Science for Health, 2012). They are costly due to the fact that they consume a large portion of the health budget and should, therefore, be handled with care to ensure the preservation of potency and efficacy by qualified personnel (Management Science for Health, 2010). Lack of these molecules in health facilities would lead to devastating consequences to patients. It would compromise the quality of patient care, leading to poor health outcomes, catastrophic health expenditure due to patients experiencing high cost of health care (Le et al., 2011) and even patient mortality. Inefficient supply chain management system would lead the County to continue experiencing losses such as expiry of medicines and medical products and be forced to spend more on procurement, so as to offer essential service to the population as mandated by the constitution.

Based on the stated problem the study aimed at addressing the supply chain management challenges that healthcare workers in Busia County face while managing medicines and medical products, address human resource for health challenges concerning supply chain management so as to make necessary changes to the current management of inventory, changes that will lead to achieving efficiency. The study also aimed at making the information, human resource for health and medicines and technology pillars of the health system functional, which would, in turn, lead to improving performance of the pharmaceutical supply chain to meet the patients' expectations.



## 1.3 Research Objectives

### 1.3.1 General Objective

The study's main objective was to assess pharmaceutical commodities supply chain management challenges that health care workers in Busia County encounter while delivering services to the population and use the information to suggest improvement on pharmaceutical supply chain performance.

### 1.3.2 Specific Objective

1. To determine the efficiency of the pharmaceutical Logistics Management Information System (LMIS) in Busia County in serving her population needs.

2. To determine whether the county funds allocated for procurement of medicines are efficiently used.

3. To determine whether the staff managing the pharmaceutical supply chain system are well trained and are of the right number.

## 1.4 Research Questions

1. Is the existing Logistics Management Information System efficient enough to serve the needs of Busia County?

2. Are the county funds allocated for procurement of medicines efficiently used?

3. Are the current staff who manage the supply chain adequately trained on supply chain management and of the right number?

## 1.5 Justification of the study

The significance of addressing the medicines and technology pillar was to enable Busia County address patient expectations in regards to the six rights of logistics by improving the performance of the pharmaceutical commodity supply chain.

Funds allocated to the medicines and technology pillar had an impact on health outcomes, which can be linked to sustainable outcomes that are aligned with national health objectives and Health Sustainable Development Goal number three, on good health and well-being, through improved health system performance.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

This chapter presents a review of relevant literature on the supply chain management, logistics management information system, budgetary expenditure on medicines and healthcare workforce. It also presents both theoretical and conceptual frameworks upon which the research is based.

## 2.2 Overview of the pharmaceutical supply chain

The pharmaceutical supply chain is an important element of a health system that involves manufacturers, suppliers, third-party service providers, middlemen, patients, activities such as logistics and includes aspects like information systems and finance (Jaberidoost, Nikfar, Abdollahiasl, & Dinarvand, 2013), all with the aim of delivering medicines and medical products in the right quantity and right quality, at the right time and at the right cost to a customer (USAID, 2011), so as to add value to all stakeholders.

The medicine value chain is a crucial component of any health system performance. Effective management of diseases is made possible through the establishment of efficient procurement and robust supply chain management systems that ensure an adequate supply of essential medicines at all times and at affordable costs. A reliable logistics network will also enable access to essential medicines and allow monitoring of medicine use in order to better assess rational drug use and ensure sustainability of the pharmaceutical supply chain. This is important to any health system as it minimizes chances of stock outs, expiries, unnecessary waste and pilferage of medicines and medical products. It also ensures availability and access to essential medicines by the population at all times as shortage of these molecules will compromise quality patient care, leading to suffering of patients, development of microbial resistance strains that are difficult to treat and end up becoming a public health hazard, therefore a danger to the population as a whole and even death (Daniel, Tegegnework, Demissie, & Reithinger, 2012).

Drug shortages may also lead to patients receiving the sub-standard quality of care and postponement of therapy or surgery (Kaiser, 2011; Rosoff, 2012). It will also lead to patients experiencing increased healthcare costs, medication errors, adverse outcomes, prescribing inaccuracies, missed dosages and reduced patient adherence to medication (Le et al., 2011), which will further worsen patient treatment outcomes.

Supply chain management, therefore, is the purposeful creation of value for stakeholders and customers through the incorporation of processes across the supply chain (Rossetti, Handfield, & Dooley, 2011). It involves organization and control of all activities involved in sourcing, acquiring, manufacturing and logistics activities (Wisner, Tan, Leong, 2012).

### 2.3 Barriers to achieving effective hospital pharmaceutical supply chains

Regulatory framework policies affecting the pharmaceutical industry directly affects the hospital pharmaceutical supply chain management. The supply chain is also affected by difficulty in forecasting commodity consumption of patients due to their health-seeking behavior and prescribing patterns of medicines by physicians. The buffer stock level is affected by uncertainties in demand by patients which results in stock-outs or expiries leading hospitals to incur high operational costs due to emergency purchases hospitals have to make in order to cater for their patients' needs (Nilay Shah, 2004).

In Sub Saharan Africa most local suppliers are unable to honor their procurement contractual obligations which include facilitation of local purchase orders of medicines and medical products and their delivery to SDPs. This greatly affects the availability of medicines in health facilities and thus the reliability of the supply chain (Arney, Yadav, Miller, & Wilkerson, 2014). There is also the aspect of non-flexible tendering process and government supply chain being too rigid that it affects the supply chain (Binanay *et al*., 2015).

According to a study done in Nigeria poor leadership and governance of health system and uncoordinated value chain affect supply chain management. The supply chain is affected by poor procurement procedures that result in medicines stock outs, unregulated market prices for medicines and medical products, poor funding by the government as evidence in poor supply chain performance. Inefficiencies in supply chain management are also brought about by lack of vital consumption data or unreliable data concerning actual demand and supply of medicines and medical products, lack of qualified personnel to manage the supply chain processes, irrational prescribing by prescribers and also irrational drug use (Obuaku, 2014).

Unreliable means of transportation of commodities to SDPs, the absence of well-founded data for supplies tracking and documentation, lack of straightforward protocols at every level of the supply chain system and poor storage facilities for medicines, medical products, and vaccines are all barriers to effective supply chain management (Biza *et al*., 2015). Some medicines and medical

products have to be imported and as a result, health facilities experience delays in delivery of essential supplies to their respective SDPs (Khozaim *et al*., 2014).

### 2.4 The Logistics Management Information System (LMIS)

According to Rushton, Croucher, & Baker (2014), LMIS refers to system of records and reports, either paper-based or electronic, which are used to aggregate, analyze, validate, and display logistics data. The primary goal of Logistics Management Information System is to ensure availability of quality health commodities at health facilities and community at large.

There are various types of Information Management Systems used by different organizations across the world. Christiansen (2015) explains that the main types of Information Management Systems are Management Information System (MIS), Executive Information System (EIS), Decision Support Systems (DSS) and Enterprise Systems. Other Information Management System include office automation system, communication system and transaction processing system.

Health care organizations are required to use standardized ways of exchanging logistic information with other systems and with specific authorizations hence the need for use of the Logistic Management Information Systems, which mostly depends on external information and standards to comply with medical regulations.

#### 2.4.1 Existing LMIS in the world

A functional LMIS is one that is cost-effective, eliminates discrepancies in stock balances and gives valid and relevant information for tracking of supplies throughout the SC (Pinna, Carrus, & Marras, 2015) to enable informed decision making.

The National Health Service in Italy rolled out an experiment involving the pharmacy department with the main objective being to rationalize the management of pharmaceuticals so as to limit clinical medication management risks and improve efficiency and effectiveness of SCMS. The idea was to centrally manage all drug-related activities by redesigning through computerized means the pharmaceutical logistics cycle activities: ordering, procurement, distribution and inventory management in order to contain costs (Pinna et al., 2015).

Pakistan, on the other hand, adopted an electronic Contraceptive Logistic Management Information System (cLMIS) in 2010 to manage inventory (Hamid, Qureshi, & Bajwa, 2017) and provide relevant data on contraceptive consumption rates (Pakistan Logistics Information System).

In East Africa, Ethiopia uses an Integrated Pharmaceutical Logistics System (IPLS) so as to ensure ordering of medicines, distribution, and reporting in public health facilities (Mudzteba, 2014).

Tanzania uses eLMIS for reporting and ordering of medicines and medical products from both facility level using paper-based system to the district and national levels where the system is computerized. eLMIS manages emergency orders in case of reports of commodity stock-outs in health facilities. They also use EPICOR9 for warehouse inventory management, CTC2 for tracking ART management and ILS gateway for some commodities whose reporting is done via SMS (Mjelva, 2017)

### 2.4.2 LMIS in Kenya

Initially, KEMSA owned the LMIS and made all decisions regarding commodity redistribution without any input from other parties but this was later revamped by the MOH to include other relevant stakeholders whose input was vital for the decision-making process. In Kenya the LMIS is used for inventory management of antiretroviral medicines, reproductive health medicines and medical products, medicines for Tuberculosis and Laboratory diagnostic testing kits for HIV/AIDS and Malaria. It is also used for essential medicine orders through KEMSA (USAID, 2007). The LMIS is used by (NASCOP) to track SCM of medicines and medical products to SDPs. It provides information on available stocks of medicines especially antiretrovirals and how the molecules are redistributed to health facilities in terms of quantities (NACC).

Busia County just like the rest of the counties in Kenya uses the LMIS for both programs funded commodities and essential medicines orders. Orders are made to the pre-qualified supplier, KEMSA (Health Sector Function Assignment and Competency Team (FACT), 2013). Stock levels are tracked throughout the supply chain, quantities needed for resupply by each and every facility are computed, and also an approximation of commodity data for future requests is made possible by the LMIS (USAID, 2007).

The current challenges with the LMIS in Busia County are lack of computers in lower level health facilities, which hinders LMIS performance. In Busia County most staff who manage the supply chain in health facilities are computer illiterate, therefore cannot handle LMIS appropriately. There is incomplete and also delayed reporting on commodity consumption especially for donor-funded commodities which interfere with supply chain performance, as delivery and proper functioning

of LMIS is dependent on adequate, accurate and timely information flow throughout the logistics cycle.

Most of the lower level facilities do not quantify their commodity needs before submitting their commodity requests. They give inaccurate information about their commodity needs, which in most cases has led to understocking and even overstocking of commodities in health facilities. Inaccurate information from health facilities also hinders decision-making at both county and national levels as data that is submitted cannot be processed and used for making important decisions on procurement and commodity redistribution. Due to this, commodity stock outs and losses that are brought about by the expiry of medicines have been experienced.

Network connections in Busia County is a big challenge as lack of reliable internet connection in the region interferes with sending reports and making requests through LMIS as this requires an internet connection. There is knowledge gap brought about by lack of staff training on LMIS. For instance, only those in charge of managing the supply chain at Sub County and County levels are familiar with LMIS use. Also, staff training on making KEMSA orders using the LMIS was done for two people per Sub County. In case of staff turnover, the supply chain performance will be greatly affected.

There is also a problem with LMIS orders not being honored by the departments concerned at the national level. Reports are made, sent and received but never checked by managers at the national level. Also, the "Push" system for donor-funded commodities is still in use by suppliers making SCM difficult for managers in SDPs.

### 2.5. Pharmaceutical Expenditure on Medicines

A vital part of health care expenditure is spending on medicines. A swift increase in medicines' spending promotes health expenditure growth and thus broadens the significance of health in the economy (Belloni, Morgan, & Paris, 2016). Lu, Hernandez, Abegunde, & Edejer, (2011) stated that the global total pharmaceutical expenditure on medicines per individual was at $20.3 for low-income countries and $71.9 for lower-middle income ones and that due to huge differences among income groups the upper-middle-income countries expenditure was at $152 per individual. According to the Kenya Health Sector Working Group Report on medium-term expenditure framework for the period 2017-18 to 2019-20 (September 2016), Ministry of Health allocation FY

2015/2016 increased by 25% with a health budget mean annual growth of 28% as compared to national health budget's 20%.

The National and County Health Budget Analysis FY 2016/17 done by the MOH states that for 2016/2017 FY MOH was allocated Kes 60.9 billion out of the whole 1,505 billion national government's budget. The allocation is equal to 3.7% down from 3.9% allocation for 2015/2016 FY. This indicates a drop in government budgetary allocation to health and that we are drifting further away from the Abuja declaration's 15% target on government spending on health. It also means that the national government's allocation for health is inadequate.

### 2.6 Pharmaceutical Commodity Supply Chain Management Costs

Costs associated with Pharmaceutical supply chain can be classified as direct, indirect, fixed, variable, order and holding costs. Direct costs are those costs that are linked to a unit of product that is produced whereas indirect costs are those that are viewed as overhead costs like cost of lighting. Fixed costs are those that are considered as sunk costs while variable costs are those that change with a change in output level like the cost of labor. When ordering commodities from a supplier, the cost incurred will be referred to as order costs. Keeping commodities in storage will attract holding (carrying) costs (Wisner, Tan, Leong, 2012).

Other costs will include transportation cost which are costs like distribution of medicines that are not included in the supplier's contract (Management Science for Health, 2012). Transportation costs will also include labor costs for staff and fuel costs (Shretta et al., 2015). When emergency purchases are made, stock shortage costs, which are additional costs are met (Management Science for Health, 2012) by an institution. Procurement costs will be incurred during activities like development of tenders and forecasting (Shretta et al., 2015).

The current challenges with budgetary allocation in Busia County are: that the leadership at the county health department are not strong enough to fight for more resource allocation for the health sector due to lack of commitment on their part and also reliable data to do so. Delays in the disbursement of funds by the national treasury lead to the county having to make adjustments, through cost-cutting measures, to the initial budgetary allocation. This leads to constrained resources at the county level, the main casualty being the health sector, which always ends up with very minimal allocation.

Political influence in budgetary allocation process by the county politicians affects the health sector as they are the ones who decide how much allocation will be given to various county departments. Since Busia like most counties gives health low priority against other county priorities like administrative costs and county investments, only 3.5% of the county budget goes to health as per the 2016/2017 county budget. This is a very minimal allocation to an important sector like health.

There is also poor planning and lack of linkage between budgeting, planning and health sector priorities leading to minimal budgetary allocation by the county. Due to this, the county has been unsuccessful in attaining its health-related targets over the years.

### 2.7 Pharmaceutical Drug Inventory Classifications

For inventory management to be effective it must enable efficient resource use and enhance patient care by guaranteeing stock availability and minimizing chances of commodity stock outs (Santhi & Karthikeyan, 2016). To manage inventory one must acknowledge inventory classification methods (Kritchanchai & Meesamut, 2015), as they affect consumption rates and medicine expenditure (Santhi & Karthikeyan, 2016).

Drug inventory is categorized into Always, Better and Control (ABC) and Vital, Essential and Non-essential (VEN), which is sometimes called VED – Vital, Essential and Desirable (Galka, 2016). For the purpose of this paper, VEN nomenclature will be used. There is an option of combining the two analyses into ABC-VEN classifications (Nigah, Devnani, & Gupta, 2010). The classifications are based on hospital Annual Drug Expenditure (ADE). This is done so as to determine which drugs need strict, average or little managerial control that makes most effective resource use and minimize chances of stockouts (Mohamed & Ahmed, 2016).

#### 2.7.1 ABC Analysis

Pareto ABC Analysis is a method used to manage inventory whose stock volume ranges in hundreds or more than that (Kritchanchai & Meesamut, 2015). It is a technique used to classify drug commodities according to their relative significance. It classifies drug commodities into three: category A, B and C. 70% of the cumulative cost are accounted for by the first 10-15% which make up category A of medicines. Category B is accounted for by 20-25% of commodities which make up 20% of the cumulative cost. Category c makeup 10% of the cumulative cost and is accounted for by 65-70% of health commodities (Anand, Ingle, Kishore, & Kumar, 2013). The

purpose of this method is to minimize complexities and by so doing enhance the effectiveness of inventory management (Kritchanchai & Meesamut, 2015).

### 2.7.2 VEN Analysis

In VEN analysis drug items are categorized into vital, essential and nonessential/desirable, based on their criticality (Kritchanchai & Meesamut, 2015).

V stands for vital items. They are life-saving medicines, have serious withdrawal side effects, and are crucial therefore their unavailability will render a hospital non-functional.

E stands for essential items. Their unavailability may not render a hospital non-functional but will definitely affect the quality of services being offered.

N stands for non-essential items and their unavailability will not affect patients' health. They are used to manage minor illnesses and their efficacy is questionable (Anand et al., 2013; Management Science for Health, 2012).

Through VEN analysis, cost containment is made possible by reducing amounts of non-essential medicines and instead directing the restricted funds to Vital and essential medicines. It is also crucial in guaranteeing the availability of life-saving drugs (Lyombe, 2013).

### 2.7.3 ABC-VEN Matrix

ABC-VEN matrix categorizes medicines into nine sub-classes: AV, AE, AN, BV, BE, BN, CV, CE, and CN by combining ABC and VEN analyses respectively. It further subcategorizes the sub-classes into three categories: I, II and III. Category I are vital items while II and III are less frequently ordered items. Category I contains items from AV, AE, AN, BV and CV subclasses. Category II contains items from BE, CE and BN subclasses whereas Category III contains items from the CN subclass (Kritchanchai & Meesamut, 2015).

ABC-VEN matrix is used for prioritization of items and to minimize item lists, especially those that need strict managerial control (Anand et al., 2013), as seen from an analysis done at an Indian tertiary care hospital showed that only 322 of 1536 medicines needed hospital managerial control (Kumar & Chakravarty, 2015).This model makes an available vital category of drugs, stressing on the importance of stocking category B and C medicines and monitoring medicine use. This is crucial since it shows that acquisition costs are not the only basis for categorizing medicines (Galka, 2016).

### 2.8 Staff Training on Supply Chain Management and personnel staffing levels

Focus on Human Resource has always been on community health workers, nurses and doctors, not on how to refine and support the supply chain (A. Brown *et al*., 2014). On this, the International Pharmacy Federation (FIP) through their Global Workforce Report in 2012 confirmed that it is necessary to have HR focus in SCM by connecting lack of access to medicines to a shortage of pharmacy staff (International Pharmaceutical Federation, 2012).

Access to medicines is hindered by a shortage of trained pharmacy personnel especially in lower level health facilities (Lubinga *et al*., 2014). Resource-poor environments fail to see that to achieve effective supply chain management and better Supply chain performance, the human resource must be managed effectively (Brown *et al*., 2014). There is also need for investment in training of health workforce and use of their skills to achieve maximum productivity as stressed on by a WHO report in 2006 (The World Health Report 2006: Working Together for Health, 2006).

Most staff, especially those that work in lower level facilities are not trained in SMC concepts and the few who are trained need to undergo training courses to improve their knowledge and skills on SMC. Constant transfers of skilled personnel especially those trained on SMC to other facilities also affects system performance (Hamid *et al*, 2017) since transferred staff in most cases do not implement their SMC training in their new facilities which further worsens the capacity of supply management in health facilities (A. N. Brown & Gilbert, 2014).

Task shifting is used to enable access to treatment and to cope with human resource shortage (Baine & Kasangaki, 2014) in most health facilities. As a result of task shifting, the nursing cadre now handles medicines and medical products in lower level facilities, due to a shortage of pharmacy personnel in these health facilities. This shortage needs to be addressed since a WHO report already approximated a health workforce shortage of 7.2 million and forecasted that the figure would be expected to go up to 12.9 million by the year 2035 (Global Health Workforce Alliance, WHO, 2013). In Kenya, the MOH HIS Annual Report (2012) pointed out that the number of pharmaceutical personnel stood at 510 and that of nurses was 20371 respectively. In the same year another report, The Economic Survey (2012) stated that for every 100,000 population there were 20 doctors, 6 pharmacists, and 155 nurses. All these cadres are vital as they are involved in the efficient management of the supply chain either directly or indirectly.

Human Resource Norms and Standard Guidelines For The Health Sector (2014) projected National HRH staffing needs as 13,141 for doctors, 38,515 for nurses and 3830 for pharmacy personnel (Ministry of Health, 2014b). Busia County staffing norm is much more constrained since it only has 23 doctors, 18 pharmacy personnel and 467 nurses (Busia County Treasury, 2016) that take care of Busia County's 886,223 total population (County Government of Busia, 2016). The number of Busia County staff is inadequate as compared to the Economic Survey (2012) report on staffing norms. This study will seek to understand the competency gaps among pharmacy personnel in Busia County, especially in relation to Pharmaceutical Commodity SCM, and give recommendations on how these can be addressed.

### 2.9 Managing supply chain challenges

A more robust supply chain that is being managed by better-trained personnel is key to improving access to health care in poor resource settings (Lubinga *et al*, 2014). Concerning donor-funded commodities such as antiretroviral medicines, availability of efficient supply chain system will enable the country to develop and manage her own procurement process and distance itself from partner-enforced distribution model like in Rwanda (David J Ripin *et al*, 2014).

To achieve efficiency hospitals should embrace technology and upgrade their current drug inventory system. Staff should also be trained on good inventory management practices so as to improve their skills (Oballah, Waiganjo, & Wachiuri, 2015) since through proper inventory management savings in total inventory cost can be made (Ilma Nurul Rachmsania, Mursyid Hasan Basri, 2012).

It is necessary to adopt efficient and effective supply chain management system so as to minimize waste and inefficiency and to better health care standards (Elmuti, Khoury, Omran, & Abou-Zaid, 2013). The government should also look into contractual obligations of suppliers and compel them to adhere to their obligations (Arney *et al*, 2014).

For organization and effectiveness, supply chain interventions need the active participation of stakeholders, an efficient LMIS, good inventory management practices and political goodwill from the government (Mukasa, Ali, Farron, & Weerdt, 2017). Increasing funding for health care will allow for the much-needed capacity building supply chain training for staff, research and development of a more comprehensible LMIS and also enable sustainability of SCMS (Mukasa et al., 2017). Addressing human resource for health shortage will go a long way to improve supply

chain management processes and inventory management practices and will also enhance smooth flow of information within the SC, leading to improved access to essential medicines by the population and good health outcomes (Lubinga *et al*, 2014).

On Annual Drug Expenditure, ABC analysis, which is based on monetary value and use is not a good measure for inventory management as some items that have low monetary value are vital and their importance can be disregarded simply because they are not category A (Wandalkar, Pandit, & Zite, 2013). Criticality of drugs is also important and should be put into consideration (Mohamed & Ahmed, 2016). Efficient and effective inventory management is achieved when ABC is used in combination with VEN analysis (Anand *et al*., 2013) as it is more cost-effective and minimalizes stock out incidences of vital medicines (Monton, Charoenchai, & Suksaeree, 2014).

There is need to address human resource for health shortage as this will improve the flow of logistics information, enable good inventory management and efficiency of the supply chain management as a whole. It will, in turn, lead to good health outcomes brought about by improved access to medicines (Lubinga *et al*, 2014). In an effort to reduce staff shortage, the government should employ the unemployed health workers with an emphasis on the right skill mix (Baine & Kasangaki, 2014).

### 2.10 Theoretical Framework for Supply Chain Management

This literature focuses on underlying theoretical basis of efficient supply chains used in medical healthcare. The theories include - agency theory, Transaction Cost Economics Theory, Psychological Contract Theory, Information theory and Resource Dependency Theory.

Agency theory focuses on the main principal actors within the medical healthcare systems, the agents involved in the supply chain and how informative decisions are made between the two parties involved in the supply chain system using the information available to them.

Transaction Cost Economics Theory focusses on the resources used within the healthcare organization. Risk factors are the prime focus study in this theory, whereby, human resource risks will be evaluated and analyzed using information available. Opportunistic behavior among the risk factors will be worth investigating for cost reduction process (Kilubi, 2017). Information theory focusses on heavily relied on information sharing within healthcare system within Busia County. Information plays important role in making right decisions that will foster changes within

healthcare system. There are so many information that are shared on daily basis that can provide meaning and informative insights.

Psychological Contract Theory focusses on partnership and gaining trust between pharmaceutical suppliers and hospitals medical service providers. If the partnership is purely strong, provision of pharmaceutical services will be achieved at the right time, and decision making processes will be quick.

Resource Dependency Theory focusses on the availability of external resources. Pharmaceutical suppliers and hospitals should have strong links to fill the gap of failure of resources in the organization as those strong links are immediate solutions to enable presence of efficient and effective there is robustness in pharmaceutical supply chain system.

### 2.10.1 Agency Theory

This theory was used by Romona Byrne & Damien Power, 2014 to analyze how firms involved in the Supply Chain are directly involved with each other and information asymmetry between the parties involved. Agency theory applies to a situation in which an actor (principal) gives control of important activities and decision-making to another party known as the agent (Sajad Fayezi, Andrew O'Loughlin, & Ambika Zutshi, 2012) and the agent is required to act in a way that serves the principal's interests and not his own.

The theory focuses on contractual obligations and supposes that due to the information available, actors are able to make rational decisions but does not consider the fact that there might be information asymmetry between the parties involved which might limit their ability to make decisions (Sanderson, Lonsdale, Mannion, & Matharu, 2015).

### 2.10.2 Transaction Cost Economics Theory

The theory was proposed by Williamson in 1975 and stresses on managing risks associated with contracting through use of governance structures. The theory helps to interpret situations where outsourcing will most probably benefit an organization. It addresses bounded rationality and information asymmetry and also addresses opportunistic behavior (Gurung & Prater, 2017) of suppliers. Under this theory, informal governance mechanism may incorporate moral outlook with self-regulation (Schmoltzi & Wallenburg, 2012), or an integration of both methods for more effective when there is a high risk of opportunism (Li, Huang, Cheng, Zheng, & Ji, 2014).

Richey et al, 2012 stated that this theory shows how firms minimalize opportunistic behavior using governing mechanisms but extreme formal governance mechanism does not prevent opportunistic behavior and may influence buyer-supplier association negatively. Therefore the use of both formal and informal mechanism is advisable as it will improve performance due to the possibility of relational cooperation making up for the rigid contractual governance and improving trust (Li et al., 2014; Wuttke, Blome, & Henke, 2013).

### 2.10.3 Information Theory

For organizations that take part in SCM to perform optimally, they must interconnect, cooperate and share information (Sanders, Autry, & Gligor, 2011; Tokar, Aloysius, Waller, & Williams, 2011). Information sharing is also crucial in ending supply disruptions through coordination and consolidation of the supply chain (Mohd Nishat Faisal, D.K. Banwet, & Ravi Shankar, 2007), so as to enable better forecasting. In this theory, organizations must acknowledge that uncertainties in the SC are brought about by mutual or reciprocal influence amongst themselves and also by functions that are carried out by supply chain players, functions that are interdependent in nature (Casey G. Cegielski, L. Allison Jones-Farmer, Yun Wu, & Benjamin T. Hazen, 2012). Information theory mainly focuses on uncertainty and information quantities (Beckstead & Beckie, 2011).

### 2.10.4 Psychological Contract Theory

The theory gives an understanding of how the integration of the supply chain is defined by long-term associations like strategic partnerships (Menon, 2012). The theory builds on trust that is reciprocated among supply chain players. The long-term relationship is characterized by mutual dependence, like pharmaceutical suppliers and hospitals, which results in achieving gains or success by both parties involved if managed well.

### 2.10.5. Resource Dependency Theory

This theory was initially proposed by Pfeffer and Salancik in 1978. The theory states that organizations change and must also come to terms with their external environment in order to acquire resources they need to sustain themselves.

Adams et al, 2014 used this theory to analyze supply chain alliances. In this theory actors lacking resources enter into associations with those with the resources to get the resources that they need in order to survive. This is brought about by the varied distribution of resources and capabilities

across different organizations hence the need to create links in order to acquire crucial resources (Kim & Choi, 2015).

### 2.11 Conceptual Framework

The conceptual framework is represented in the diagram below which shows the correlation between the study variables. It is developed from the Pharmaceutical Logistics Cycle (Fig 2). The independent variables are the LMIS, budgeting for medicines, medical products and vaccines and also adequate and human resource for health, who manage the Supply Chain. When manipulated through interventions, the independent variables will have an effect on the dependent variables, which are efficient product selection, efficient quantification, and procurement process, efficient inventory management and patient satisfaction respectively.

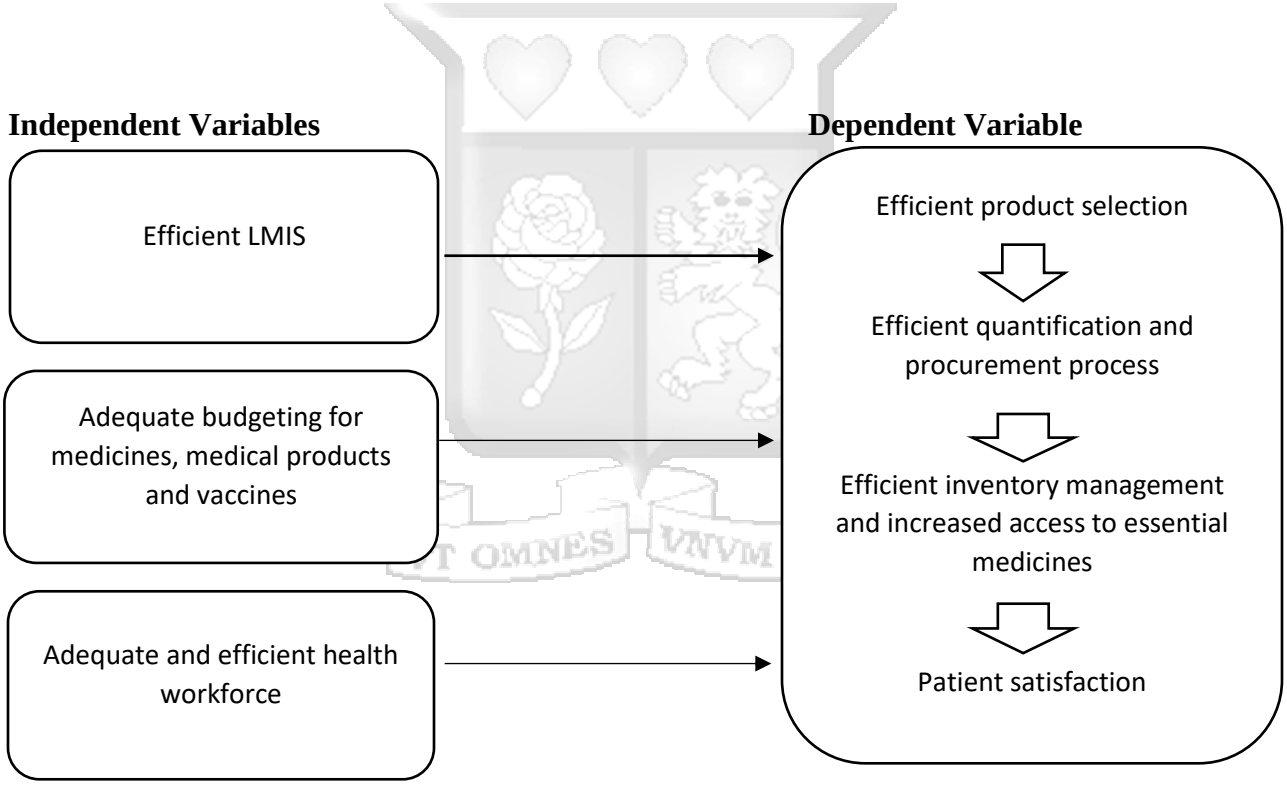



**Figure 2: Conceptual Framework**

## CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Introduction

The chapter describes research design, study population, data collection tools, data collection and data analysis.

### 3.2 Research Design

A cross-sectional descriptive study design was used. Direct observation method and a questionnaire (Annex 1) were used to record key competency gaps of staff who use LMIS optimally at their health facilities. Self-administered questionnaire (Annex 3) was used to get information from staff who manage hospital pharmaceutical supply chain at different facility levels and procurement records (Appendices 1-14) were used to determine the availability of medicines in the facilities. ABC, VEN and ABC-VEN analysis were done to calculate pharmaceutical Annual Drugs Expenditure (ADE) for sub county hospitals in

Busia County.

### 3.3 Sampling

#### 3.3.1 Study Sites – Busia County health facilities

The study focused on staff who manage the pharmaceutical commodity supply chain: pharmacy and nursing department, since pharmacy personnel were not available in lower level facilities. The county store and five facilities per Sub-county were targeted for this study as shown in table 2 below.

| Sub county | Sub county Hospital | Health Centre | Dispensary | | |
|---|---|---|---|---|---|
| | | | GOK(High Volume) | GOK(Low Volume) | FBO Dispensary |
| Matayos | Busia County Referral Hospital | Matayos Health Centre | Busia Prisons Dispensary | Nasira Dispensary | Tanaka Nursing Home due to lack of a faith-based organization facility in that particular sub county |

| | | | | | |
|---|---|---|---|---|---|
| Sio Port Sub county and | Sio Port Sub county Hospital | Nambuku Health Centre | Nangina Dispensary | Agenga dispensary | Namboboto Health Centre since the sub county did not have a faith-based organization dispensary. |
| Butula Sub county | Khunyangu Sub county Hospital | Ikonzo Health Centre | Bukhalarire Dispensary | Emajubu Dispensary | Butula Mission Health Centre due to the sub county lacking a faith-based organization dispensary |
| Teso South Sub county | Teso South Sub county Hospital | Amukura Health Centre | Amukura Dispensary | Lukolis Dispensary | Amukura Mission Health Centre due to the sub county lacking a faith-based organization dispensary |
| Bunyala Sub county | Port Victoria Sub county Hospital | Mukhobola Health Centre | Budalangi Dispensary | Sisenye Dispensary | Sirimba Dispensary |
| Teso North Sub county | Teso North Sub county Hospital | Angurai Health Centre | Malaba Dispensary | Aboloi Dispensary | Kolanya Salvation Army Dispensary |

**Table 1: Busia County Study Sites**

### 3.3.2 Population and Sampling

The study targeted health facility personnel tasked with the responsibility of managing the supply chain. The sampling method was purposive as it targeted specific staff who were involved in supply chain management (Tables 1 and 2 below) and also personnel at County level who were involved in the decision-making process.

| No. | County Store | County Referral Hospital | Sub County Hospitals | Health Centers | Dispensaries | | |
|---|---|---|---|---|---|---|---|
| | | | | | GOK | | FBO |
| | | | | | High Volume | Low Volume | |
| Number of health facilities in Busia County | 1 | 1 | 6 | 14 | 19 | 31 | 11 |
| Number of health facilities targeted for the study | 1 | 1 | 6 | 7 | 7 | 7 | 6 |

**Table 2: Busia County Health Facilities**

| | |
|---|---|
| Total number of health personnel working in Busia County who manage the pharmaceutical supply chain | 519 |
| Number of health personnel targeted for the study that works in Busia County | 50 |

**Table 3: Human Resource for Health in Busia County**

**Inclusion criteria:** personnel who handle supply chain management and have worked in a particular workstation or county level for more than a year and county personnel involved in decision making, procurement, and budgetary allocation.

**Exclusion Criteria**: personnel who have not been holding their current position for more than a year and those who are not involved in supply chain management or decision making process both at the county and facility level.

### 3.4 Data Collection Methods

To address RQ1 (Is the existing Logistics Management Information System sufficiently robust to serve the needs of Busia County?), direct observation method, as well as a questionnaire (Annex 1) were used to check on the efficiency and use of LMIS system in sub-county hospitals.

To address RQ2 (Are funds meant for procurement of medicines efficiently used?) Archival method was used to collect data. Study tools were ABC and VEN analysis (Appendices 1-14).

To address RQ3 (Are the current staff who manage the pharmaceutical commodity supply chain adequately trained and of the right number), a questionnaire (Annex 3) was administered to the pharmacy and nursing personnel through research assistant in order to assess competency gaps among personnel in relation to pharmaceutical supply chain management and staffing norms of personnel managing the pharmaceutical commodity supply chain in Busia County

### 3.5 Data Management

For analysis of data for RQ1 and RQ3, quantitative data analysis was done using Statistical Package for Social Sciences (SPSS). Objectives 1 and 3 were critically analyzed and inferences made in relation to the research objectives. Descriptive statistics were presented in form of charts and tables.

For ABC analysis, Annual Drugs Expenditure (ADE) for each drug in the essential medicines list were calculated from inventory records and then drugs were arranged in descending order with the medicines with high Annual Drugs Expenditure at the top and those with low Annual Drugs Expenditure at the bottom. Calculation of cumulative cost was then done which totaled up to 100% of the total pharmaceutical Annual Drugs Expenditure. Data was then plotted according to class A (those medicines that consume 70% of Annual Drugs Expenditure), B (those that consume 20% of ADE) and C (those medicines that consume 10% of Annual Drugs Expenditure) respectively.

For VEN analysis VEN status of each drug was established using the hospital medicines and therapeutic committee decision. Annual Drugs Expenditure was calculated from inventory records, medicines were classified to their respective classes, total Annual Drugs Expenditure was calculated and their presentation made in form of tables.

Cross-tabulation was done for ABC-VEN matrix analysis by categorizing medicines as I (those that are expensive, vital, and require managerial control) II (those that are essential and cost

averagely) and III (those medicines that are non-essential ones and cheap). MS Excel spreadsheets, ratios, percentages and frequency tables were used in quantitative data analysis.

### 3.6 External and Internal Validity

For internal validity, results from data collected were attributed to the independent variable. ABC and VEN analysis, which are well-established methods were used together with validated records of Busia County medicines expenditure to analyze the sufficiency of budgetary allocation for health as well as if county funds allocated for health are well utilized. Data collection tools that were used in this study were standardized tools that had been used in a similar context. Busia County procurement records that were used for this study were those achieved through current procurement methods embraced by the county government, which had national government approval. The questionnaires that were being used for this study were pre-tested by giving them to my work colleagues for piloting phase before use in the study in my facility a week before the commencement of data collection.

Healthcare workers that participated in the study were required to sign informed consent document (Annex 5), which had to be vetted and cleared by the Ethics Committee of Strathmore Business School. The consent was treated with confidentiality and used solely for its intended purpose which was MBA-HCM dissertation.

## CHAPTER FOUR: RESULTS

### 4.1 Introduction

This chapter presents the findings based on the data collected using questionnaires and procurement records for medicines. Response rate by participants during this study was 100% as all the 50 participants answered all the questions from the questionnaires.

### 4.2 Logistic Management Information System (LMIS)

#### 4.2.1 Cadre distribution of the interviewee

The respondents were asked to indicate their cadres. The findings revealed that out of the 50 respondents, 26 respondents (52%) were nurses, 15 respondents (30%) were pharmaceutical technologists, 8 respondents (16%) were pharmacist while 1 respondent (2%) was a clinical officer. This finding suggests that most of the healthcare employees in Busia County who manage the supply chain in health facilities are nurses as summarized in figure 4 below.

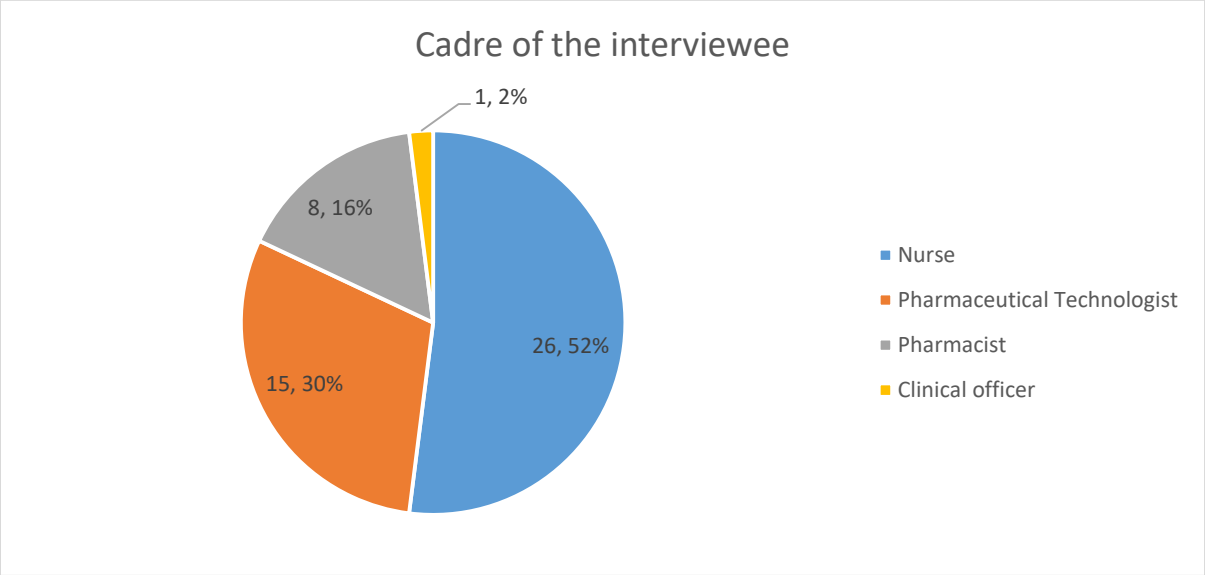



**Figure 3: Cadre of interviewee**

#### 4.2.2 Supply chain management

The respondents were asked to indicate the officer responsible for supply chain management in their respective facilities. From the findings, 21 respondents (42%) said that Nursing officer-in-charge was responsible, 19 respondents (38%) said that Hospital/Sub County Pharmacist was responsible, 8 respondents (16%) said that Pharmaceutical Technologist was responsible while 2 respondents (4%) said that other officers were responsible as shown in table 4 below. This finding

suggests that supply chain management is managed by Nursing officer-in-charge in most of the healthcare facilities in Busia County.

| | | Frequency | Percent |
|---|---|---|---|
| **Table 4: Supply chain management** | Nursing officer in-charge | 21 | 42 |
| | Hospital/Sub County Pharmacist | 19 | 38 |
| | Pharmaceutical Technologist | 8 | 16 |
| | Others (specify) | 2 | 4 |
| | Total | 50 | 100 |
| **Table 5: Supply chain documents** | Do you regularly use Counter Issue and Requisition Forms to manage the supply chain? | YES | 92.00% |
| | | NO | 8.00% |
| | Do you regularly use Stock Control Cards to manage the supply chain? | YES | 100.00% |
| | | NO | 0.00% |
| | Do you regularly use Daily Activities Register to manage the supply chain? | YES | 94.00% |
| | | NO | 6.00% |
| | Do you regularly use the Antibiotic Register to manage the supply chain? | YES | 74.00% |
| | | NO | 26.00% |
| | Do you regularly use Insulin Register to manage the supply chain? | YES | 30.00% |
| | | NO | 70.00% |
| | Do you regularly use Register for Controlled Drug Substances to manage the supply chain? | YES | 36.00% |
| | | NO | 64.00% |

The respondents were asked to denote the documents used to manage supply chain management in their facilities on a regular basis. From the findings, counter issue and requisition forms were used by 92% of the respondents, stock control cards were used by 100% of the respondents, daily activities registers were used by 94% of the respondents. Antibiotic register was used by 74% of the respondents, insulin register by 30% of the respondents and register for controlled substances was used by 36% of the respondents, as summarized in Table 5 above. This finding suggests that insulin register and register for controlled substances are rarely used to manage the supply chain in healthcare facilities in Busia County.

### 4.2.3 LMIS forms

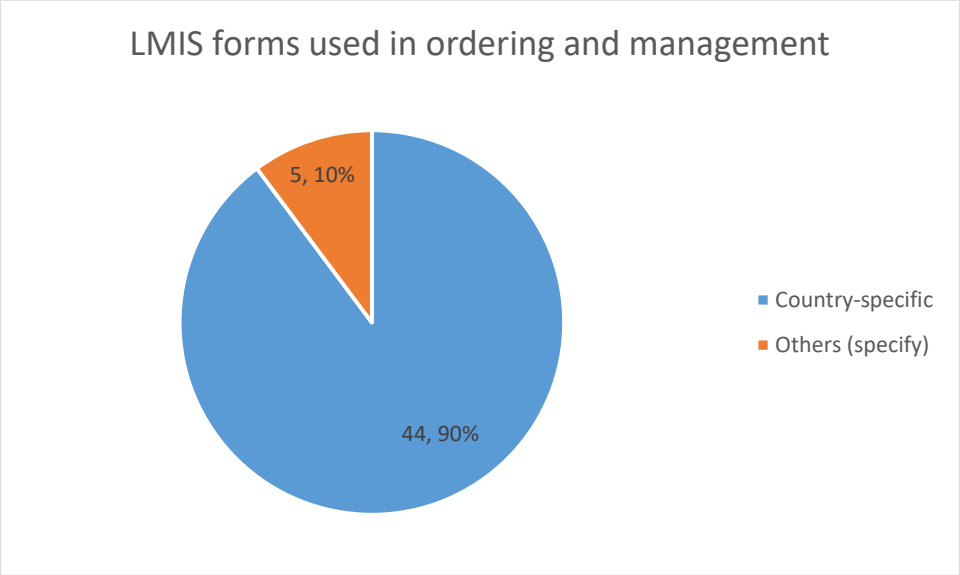



**Figure 4: LMIS forms use in ordering and commodity management**

The respondents were asked what LMIS forms they used for ordering and reporting on Commodity management. From figure 6 below, 90% of the respondents said they used country-specific LMIS forms while 10% used other forms namely Facility Consumption Data Recording and Reporting (FCDRR) forms and Facility (FMAPS).

### 4.2.4 LMIS forms availability

| | | | Column N % |
|---|---|---|---|
| **Table 6: LMIS forms availability** | Are the LMIS forms always available for facility use during reporting or ordering process | YES | 82.00% |
| | | NO | 18.00% |
| | Does the tool cover all the key areas as it is supposed to | YES | 90.00% |
| | | NO | 10.00% |
| **Table 7:Commodity orders and reports** | How often do you send Commodity orders to the County and National levels for appropriate action | Monthly | 14.00% |
| | | Quarterly | 86.00% |
| | How often do you send Commodity reports to the County and National levels for appropriate action | Monthly | 98.00% |
| | | Quarterly | 2.00% |
| **Table 8: Timely submission of orders and reports** | Are your reports and orders submitted to the relevant departments on time | YES | 98.00% |
| | | NO | 2.00% |
| | Is the data you submit normally accurate and complete | YES | 94.00% |
| | | NO | 6.00% |

### 4.2.5 Duration of sending forms to the county and national level

The participants were asked how often they sent the commodity orders and reports to the County and National levels for appropriate action. From the findings, 14% of the respondents said they sent commodity orders on a monthly basis to the national level for appropriate action while 86% said they sent commodity orders on a quarterly basis to the county level for appropriate action. In terms of sending reports, 98% of the respondents said they sent commodity reports on a monthly basis to the county for appropriate action while 2% said they sent commodity report quarterly to the national level for appropriate action. This is summarized in table 7 above.

### 4.2.6 Timely submission of orders and reports

The participants were asked if the reports and orders are submitted to the relevant departments on time and if the data submitted is normally accurate and complete. From the findings, 98% of the respondents said the reports and orders are submitted to the relevant departments on time and 94% said the data submitted is normally accurate and complete. This is summarized in table 8 above.

### 4.2.7 Emergency order

The participants were asked if they had placed an emergency order in the last two weeks. From the findings, 54% of the respondents said they had not placed an emergency in the last two weeks while 46% said they had placed an emergency order in the last two weeks. This is summarized in figure 6 below.

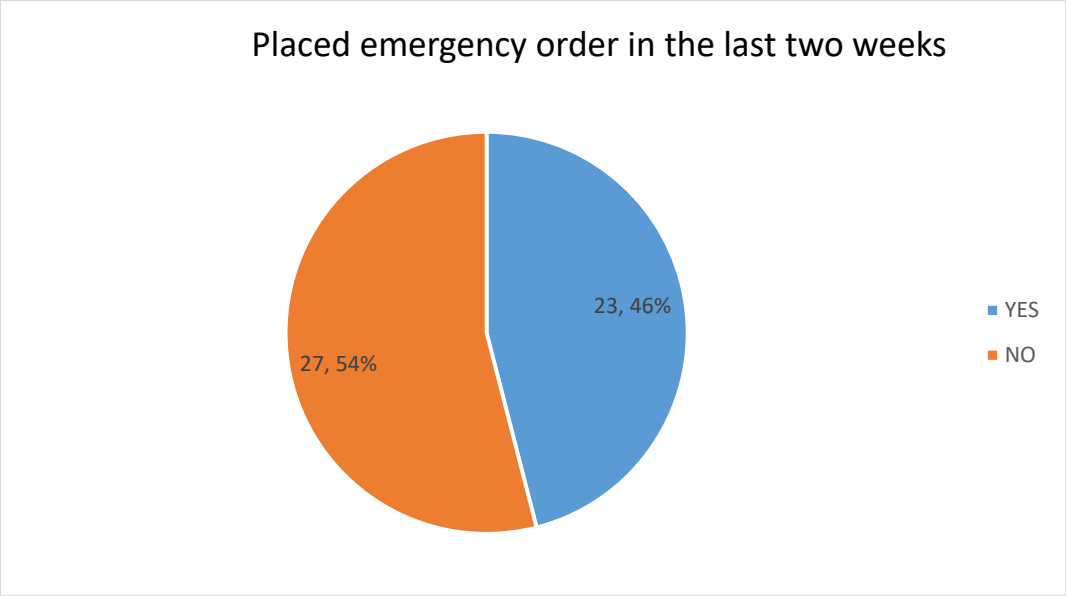



**Figure 5: Have you had to place an emergency order in the last two weeks**

### 4.2.8 Transport means

The respondents were asked what transportation means were used to ferry commodities from the supplier directly to the facility. From the findings, 86% of the respondents said contracted companies were used, 8% of the respondents said facility utility vehicles were used for that exercise while 6% said motorcycles were used to ferry commodities from the supplier directly to the facility.

The respondents were also asked about means of transportation they normally used to ferry commodities from the county or sub county store to the facility. From the findings, 24% of the respondents said contracted companies were used, 44% of the respondents said facility utility vehicles were used, 6% said private vehicle were used while 26% said motorcycles were used to ferry commodities from the county or sub county hospital store directly to the facility. This is summarized in table 9 below.

| | | Count | Column N % |
|---|---|---|---|
| What transportation means is used to ferry commodities from the supplier directly to the facility? | Contracted companies | 43 | 86.0% |
| | Facility utility vehicle | 4 | 8.0% |
| | Motorcycle | 3 | 6.0% |
| What transportation means is used to ferry commodities from the County or Sub County store to the facility? | Contracted company vehicles | 12 | 24.0% |
| | Facility utility vehicle | 22 | 44.0% |
| | Private vehicle | 3 | 6.0% |
| | Motorcycle | 13 | 26.0% |

**Table 9: Transport means**

### 4.2.9 Lead time

The respondents were asked what their lead time was. From the findings, 34% of the respondents said their lead time was more than a three months, 28% of the respondents said their lead time was a quarter, 24% of the respondents said their lead time was a month, 8% of the respondents said their lead time was two months and 6% of the respondents said their lead time was two weeks as shown in figure 7 below.

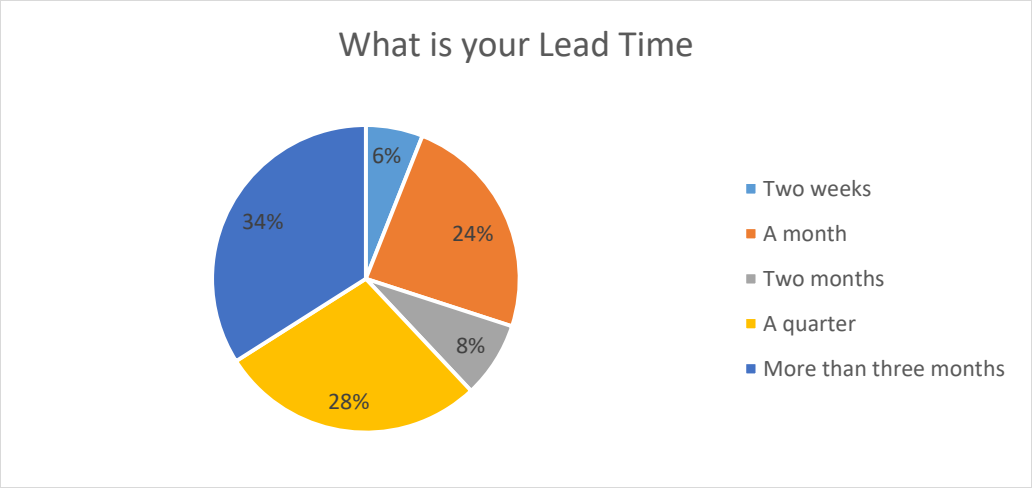



**Figure 6: Lead time**

### 4.2.10 Facility infrastructure

| | | | Column N % |
|---|---|---|---|
| **Table 10: Facility infrastructure** | Is the facility connected to any form of electricity | YES | 94.00% |
| | | NO | 6.00% |
| | Does the facility embrace electronic management tools for commodity management? | YES | 26.00% |
| | | NO | 74.00% |
| | If yes on question 2 above, is the facility using current commodity management software? | YES | 17.80% |
| | | NO | 82.20% |
| | Is the facility well connected to the internet? | YES | 22.00% |
| | | NO | 78.00% |
| **Table 11: Supply chain staff** | How many Pharmacy staff in this facility handle the supply chain | 49 | 0.69 |
| | How many Pharmaceutical technologists staff in this facility handle the supply chain | 49 | 0.71 |
| | How many Nurses staff in this facility handle the supply chain | 49 | 1.61 |
| | How many of the Pharmacists staff above are trained on LMIS use | 49 | 0.37 |
| | How many of the Pharmaceutical technologists staff above are trained on LMIS use | 49 | 0.47 |
| | How many of the Nurses staff above are trained on LMIS use | 49 | 0.53 |
| | Valid N (list wise) | 49 | |

The respondents were asked about the health facility infrastructure they work in. From the findings, 94% of the respondents said that their respective facilities were connected to electricity,

26% of the respondents said that the facilities embraced electronic management tools for commodity management, 17.8% of the respondents said that their facilities were using current commodity management software while 22% of the respondents said that their facilities were connected to internet. This is summarized in table 10 above.

### 4.2.11 Supply chain staff

The respondents were asked how many staff in the facility could handle supply chain and how many were trained on LMIS. From the findings, at least one pharmacist, one pharmaceutical technologist and two nurses could handle supply chain at any given time. Also, at least one pharmacist, one pharmaceutical technologist and two nurses in most of the facilities were trained on LMIS. This is summarized in table 11 above.

### 4.2.12 Decision making

The respondents were asked whether LMIS data collected from facilities aids them in decision-making. From the findings, 60% of the respondents said that the LMIS data aided them in decision making as shown in figure 9 below.

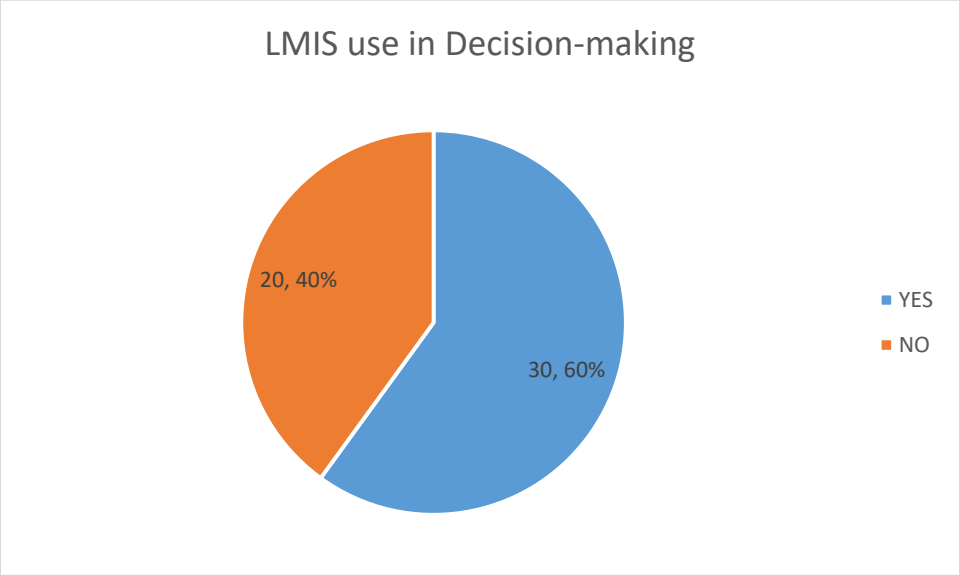



**Figure 7: LMIS use in decision making**

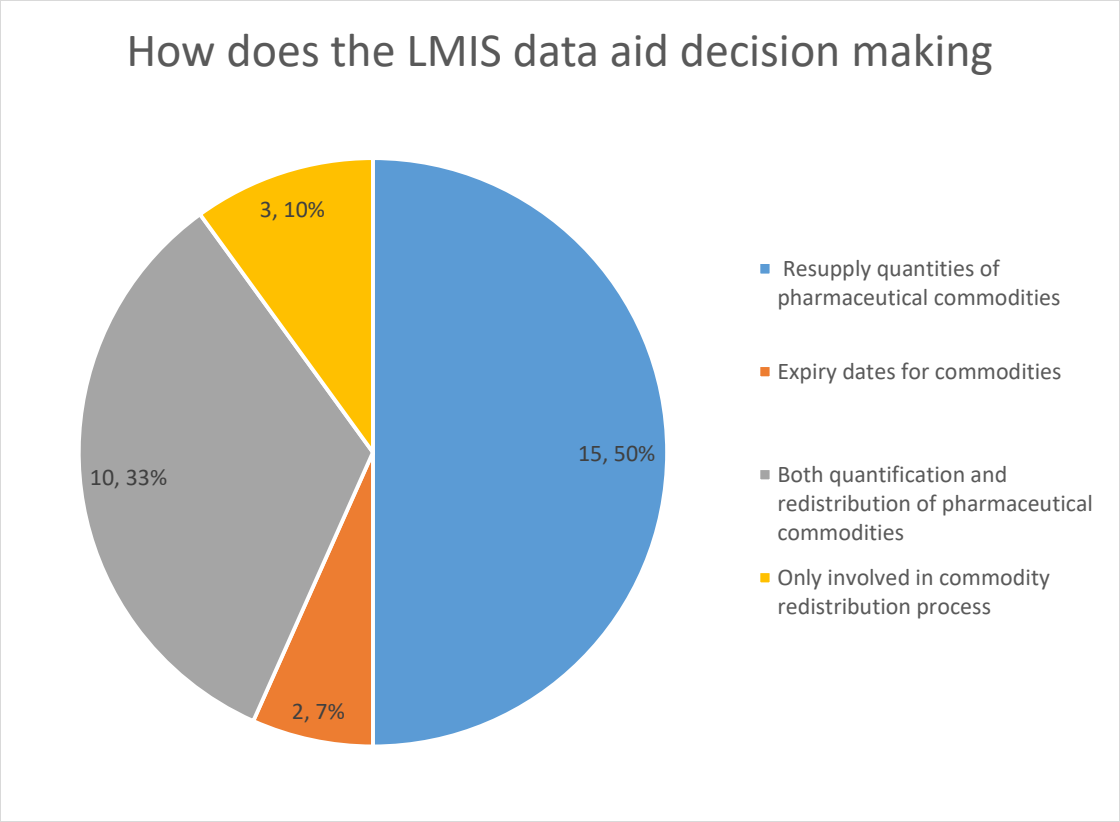



**Figure 8: How does the LMIS data aid in decision making**

Of the 60% who said yes, 50% said the LMIS data aided them in determining the resupply quantities of pharmaceutical commodities, 33% said the data aided in both quantification and redistribution of pharmaceutical commodities, 10% said the data aided them in monitoring commodity expiry dates, whereas 7% said the data aided them only in commodity redistribution as summarized in figure 10 above.

### 4.2.13 Preferences

The respondents were also asked to comment on their preferences of the electronic LMIS use as compared to the manual system or vice versa. From the findings, only 29 participants responded to this question with 44.8% saying that they preferred the electronic LMIS since it was more efficient and accurate and 27.6% said they prefer the electronic LMIS since it saves time. 17.2% said they preferred the electronic LMIS since it was easier to use and 10.3% preferred using the manual system since it was not affected by power blackouts hence found it to be more reliable than the electronic one. This is summarized in table 12 below.

| | | Frequency | Cumulative Percent |
|---|---|---|---|
| **Table 12: Preferences** | Electronic LMIS since it is easier to use | 5 | 17.2 |
| | Electronic LMIS since its more efficient and accurate | 13 | 62.1 |
| | Electronic LMIS since its saves time | 8 | 89.7 |
| | Manual system due to reliability in times of power blackouts | 3 | 100 |
| | Total | 29 | |
| **Table 13: LMIS use in facilities** | Is the software appropriate to you and to your work? | YES | 49.00% |
| | | NO | 51.00% |
| | Does the current LMIS make the necessary adjustments and commodity requests when the need arises? | YES | 72.00% |
| | | NO | 28.00% |
| | Is the reporting timely? | YES | 88.00% |
| | | NO | 12.00% |
| | Are you able to teach other staffs on LMIS use? | YES | 70.00% |
| | | NO | 30.00% |
| | Do you and your staff need additional training on LMIS use? | YES | 94.00% |
| | | NO | 6.00% |
| | In your opinion is the LMIS system versatile? | YES | 66.00% |
| | | NO | 34.00% |

### 4.2.14 LMIS use in the facilities

The respondents were asked about the LMIS use in the facilities they worked in. From the findings, 49% of the respondents said the LMIS software was appropriate for them and to their work, 72% of the respondents said the current LMIS could make the necessary adjustments and commodity requests when need arose. 88% of the respondents said the reporting using LMIS was timely while 70% of the respondents said they are actually able to teach other staffs on LMIS use. However, 94% of the respondents said they needed additional training on LMIS use whereas 66% of the respondents said the LMIS system was versatile. This is summarized in table 13 above.

### 4.2.15 Reasons for Commodity Stock-outs

The respondents were asked to state reasons for the commodity stock-outs in their respective facilities. From the findings, 16% of the respondents said long lead time was the reason for the stock outs, 12% of the respondents said poor commodity management, poor record keeping and also under ordering were the reasons for the commodity stock outs. 8% of the respondents said poor storage was the reason for the stock outs, 4% of the respondents said County bureaucracies were to blame, delays in: supply delivery to facilities and disbursement of funds by county. Also

supply chain failures, inadequate finances for procurement of pharmaceutical commodities, poor commodity consumption level, poor commodity quantification by facilities, use of push system for donor-funded commodities by the national government and health workers' lengthy strikes were the other reasons for the commodity stock outs that the county health facilities experience from time to time as summarized in table 14 below.

| | | Frequency | Cumulative Percent |
|---|---|---|---|
| **Table 14: Reasons for commodity stock outs** | County bureaucracies | 2 | 4 |
| | Delay in supply | 2 | 8 |
| | Disbursement of funds by county | 2 | 12 |
| | Failures | 2 | 16 |
| | Inadequate finances | 2 | 20 |
| | Long lead time | 8 | 36 |
| | Poor consumption level | 2 | 40 |
| | Poor management | 6 | 52 |
| | Poor quantification | 2 | 56 |
| | Poor record keeping | 6 | 68 |
| | Poor storage | 4 | 76 |
| | Push system | 2 | 80 |
| | Strikes | 2 | 84 |
| | Transport | 2 | 88 |
| | Under ordering | 6 | 100 |
| | Total | 50 | |
| **Table 15: What could be done to manage commodity stock out situations in health facilities** | Avail transport | 2 | 5.7 |
| | Better coordination between procurement and distribution staff | 2 | 11.4 |
| | Better record keeping | 2 | 17.1 |
| | Cost sharing | 1 | 20 |
| | Improve drug management | 2 | 25.7 |
| | Local purchases | 2 | 31.4 |
| | Managers to ensure prompt orders and delivery | 2 | 37.1 |
| | Proper documentation | 4 | 48.6 |
| | Proper quantification | 2 | 54.3 |
| | Re-distribution | 4 | 65.7 |
| | Reduce lead time | 8 | 88.6 |
| | Reintroduction of user fee | 2 | 94.3 |
| | Supply promptly | 2 | 100 |
| | Total | 35 | |
| **Table 16: Commodities resupply quantities determination** | Pharmacist based on consumption | 4 | 22.2 |
| | In-charge user using previous quarter consumption | 2 | 33.3 |
| | Pharmacist using Consumption *4-stock count | 8 | 77.8 |
| | Pharmacist using population and treatment conditions | 4 | 100 |
| | Total | 18 | |

The respondents were asked to state what could be done to manage the pharmaceutical commodity stock out situations in their respective facilities. From the findings, 22.9% of the respondents said reducing the lead time will help manage stocks out situations, 11.4% said better record keeping in their facilities will help manage commodity stock outs. 11.4% said commodity re-distribution among facilities will help manage stocks as summarized in table 15 above.

### 4.2.16 Resupply quantities determination

The respondents were asked to state who, what and how commodity resupply quantities were determined in their respective facilities. From the findings, 44.4% of the respondents said the Pharmacist was the one responsible for determining commodity quantities that were needed for resupply. Resupply quantities were calculated using monthly commodity consumption levels *3months of stock plus a month of buffer stock. 22.2% of the respondents said the Pharmacist was responsible and that quantities of commodities needed for resupply were calculated based on commodity consumption levels of the facility. 22.2% of the respondents said that the Pharmacist was responsibly and that commodity resupply quantities were determined based on the population they served (workload) and their treatment conditions. 11.1% of the respondents said that the facility officer in-charge was responsible for making the orders and would use previous quarter consumption records to make commodity orders. This is summarized in table 16 above.

## 4.3. Efficient use of county funds for procurement of medicines

#### 4.3.1.1 Busia County Referral Hospital 2015-2016

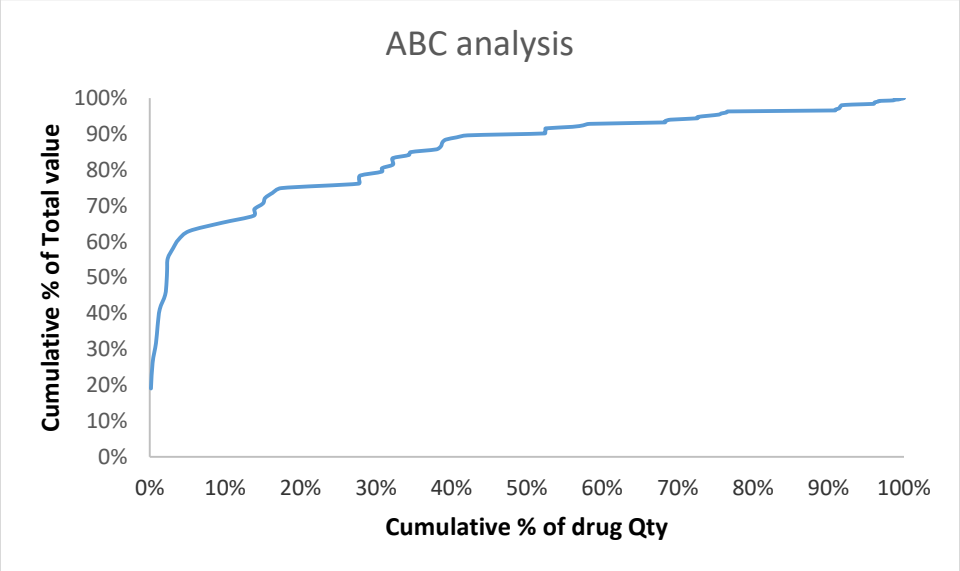



**Figure 9: ABC analysis of Busia County Referral Hospital 2015-2016**

For the year 2015-2016, total quantities of 70,164 drugs were purchased by Busia County Referral Hospital that amounted to a total expenditure of Kes 5,247,759. On ABC analysis, 17.43% (*n*=19), 35% (*n*=19) and 47.57% (*n*=48) drugs were found to be A, B and C category items. These items accounted for 74.92% (Kes. 3,931,650), 15.73% (Kes. 825,325) and 9.36% (Kes. 490,784) of ADE of the drug store as shown in the figure 11 above and Appendix 1 respectively.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 40.77% | 53.64% | 41 | 2815075 |
| E | 7.17% | 3.22% | 9 | 169225 |
| N | 52.06% | 43.13% | 36 | 2263459 |

**Table 17: VEN analysis of Busia County Referral Hospital 2015-2016**

On VEN analysis, 40.77% (*n*=41), 7.17% (*n*=9) and 52.06% (*n*=36) drugs were found to be V, E and N category items and accounted for 53.64% (Kes. 2,815,075), 3.22% (Kes. 169,225) and 43.13% (Kes. 2,263,459) of ADE of the drug store as summarized in table 17 above.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 13 | BV | 10 | CV | 18 |
| E | AE | 1 | BE | 0 | CE | 8 |
| N | AN | 5 | BN | 9 | CN | 22 |

**Table 18: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 41.22% | 86.35% | 46 | 4531675 |
| II | 31.35% | 9.47% | 17 | 496810 |
| III | 27.43% | 4.18% | 23 | 219274 |

**Table 19: ABC-VEN matrix analysis 2015-2016**

From ABC-VEN matrix analysis in table 18 and table 19 above, there were 46 (41.22%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 17(31.35%) items in category II consisting of BE, BN and CE subgroups and 23 (27.43%) items in category III consisting of CN subgroup. These items accounted for 86.35% (Kes 4,531,675), 9.47% (Kes. 496,810) and 4.18% (Kes. 219,274) of ADE of the drugs respectively.

### 4.3.1.2.Busia County Referral Hospital 2016-2017

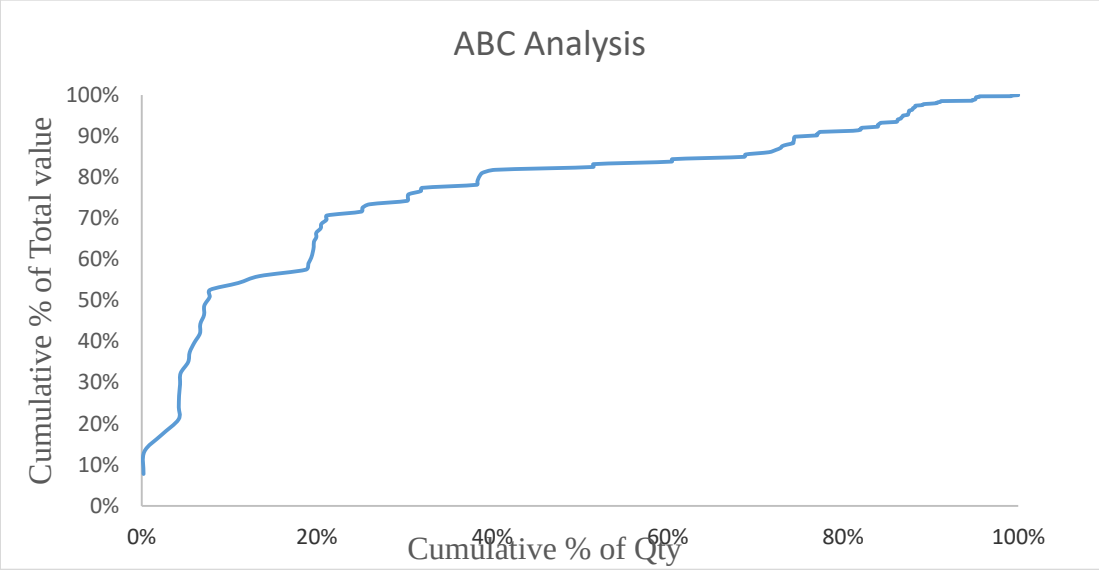



**Figure 10: ABC analysis of Busia County Referral Hospital 2016-2017**

For the year 2016-2017, total quantities of 279,537 drugs were purchased by Busia County Referral Hospital that amounted to a total expenditure of Kes 16,123,985. On ABC analysis, 20.5% (*n*=29), 54.03% (*n*=33) and 25.47% (*n*=83) drugs were found to be A, B and C category items and these items accounted for 68.61% (Kes. 11,062,150), 15.73% (Kes. 3.474,175) and 10.15% (Kes. 1,636,660) of ADE of the drug store as shown in the figure 12 above and Appendix 2.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 27.36% | 42.11% | 49 | 6789195 |
| E | 0.56% | 0.74% | 6 | 119250 |
| N | 72.08% | 57.15% | 90 | 9215540 |

**Table 20: VEN analysis of Busia County Referral Hospital 2016-2017**

On VEN analysis, 27.36% (*n*=49), 0.56% (*n*=6) and 72.08% (*n*=90) drugs were found to be items of V, E and N categories that amounted to 42.11% (Kes. 6,789,195), 0.74% (Kes. 119,250) and 57.15% (Kes. 9,215,540) of ADE of the drug store as summarized in table 20.

From ABC-VEN matrix analysis in table 21 and table 22 below, there were 63 (40.67%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 31(44.67%) items in category II consisting of BE, BN and CE subgroups and 51 (14.66%) items in category III consisting of CN subgroup. These items accounted for 76.34% (Kes 12,309,195), 16.51% (Kes. 2,661,365) and 7.15% (Kes. 1,153,425) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 12 | BV | 8 | CV | 28 |
| E | AE | 0 | BE | 0 | CE | 6 |
| N | AN | 17 | BN | 25 | CN | 49 |

**Table 21: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 40.67% | 76.34% | 63 | 12309195 |
| II | 44.67% | 16.51% | 31 | 2661365 |
| III | 14.66% | 7.15% | 51 | 1153425 |

**Table 22: ABC-VEN matrix analysis 2016-2017**

#### 4.3.2.1 Khunyangu Sub county Hospital 2015-2016

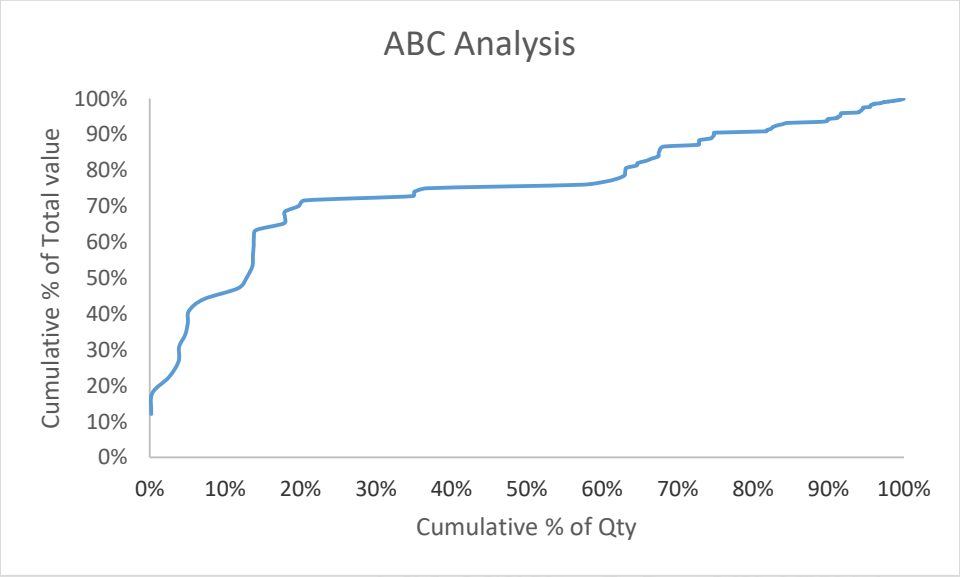



**Figure 11: ABC analysis of Khunyangu Sub county Hospital 2015-2016**

For the year 2015-2016, total quantities of 86,697 drugs were purchased by Khunyangu Sub-County Hospital that amounted to a total expenditure of Kes 5,150,445. On ABC analysis, 20.49% (*n*=21), 54.34% (*n*=28) and 25.17% (*n*=74) drugs were found to be A, B and C category items that amounted to 71.64% (Kes. 3,689,900), 18.51% (Kes. 953,595) and 9.84% (Kes. 506,950) of ADE of the drug store as shown in the figure 13 above and Appendix 3.

On VEN analysis, 36.01% (*n*=44), 1.01% (*n*=5) and 62.98% (*n*=74) drugs were found to be V, E and N category items. These items accounted for 50.93% (Kes. 2,623,290), 3.89% (Kes. 200,445) and 45.17% (Kes. 2,326,710) of ADE of the drug store as summarized in table 23.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 36.01% | 50.93% | 44 | 2623290 |
| E | 1.01% | 3.89% | 5 | 200445 |
| N | 62.98% | 45.17% | 74 | 2326710 |

**Table 23: VEN analysis of Khunyangu Sub county Hospital 2015-2016**

From ABC-VEN matrix analysis in table 24 and table 25 below, there were 57 (45.04%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 21(33.70%) items in category II consisting of BE, BN and CE subgroups and 45 (21.26%) items in category III consisting of CN subgroup. These items accounted for 82.03% (Kes 4,224,790), 11.76% (Kes. 605,820) and 6.21% (Kes. 319,825) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 9 | BV | 9 | CV | 27 |
| E | AE | 1 | BE | 1 | CE | 2 |
| N | AN | 11 | BN | 18 | CN | 45 |

**Table 24: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 45.04% | 82.03% | 57 | 4224790 |
| II | 33.70% | 11.76% | 21 | 605820 |
| III | 21.26% | 6.21% | 45 | 319835 |

**Table 25: ABC-VEN matrix analysis 2015-2016**

#### 4.3.2.2 Khunyangu Sub county Hospital 2016-2017

For the year 2016-2017, a total quantity of 21,724drug was purchased by Khunyangu Sub-County Hospital **that** amounted to a total expenditure of Kes 1,731,254. On ABC analysis, 17.08% (*n*=15), 47.45% (*n*=17) and 35.47% (*n*=44) drugs were found to be A, B and C category items that accounted for 67.58% (Kes. 1,170,000), 23.08% (Kes. 399,640) and 9.34% (Kes. 161,614) of ADE of the drug store as shown in the figure 14 below and Appendix 4.

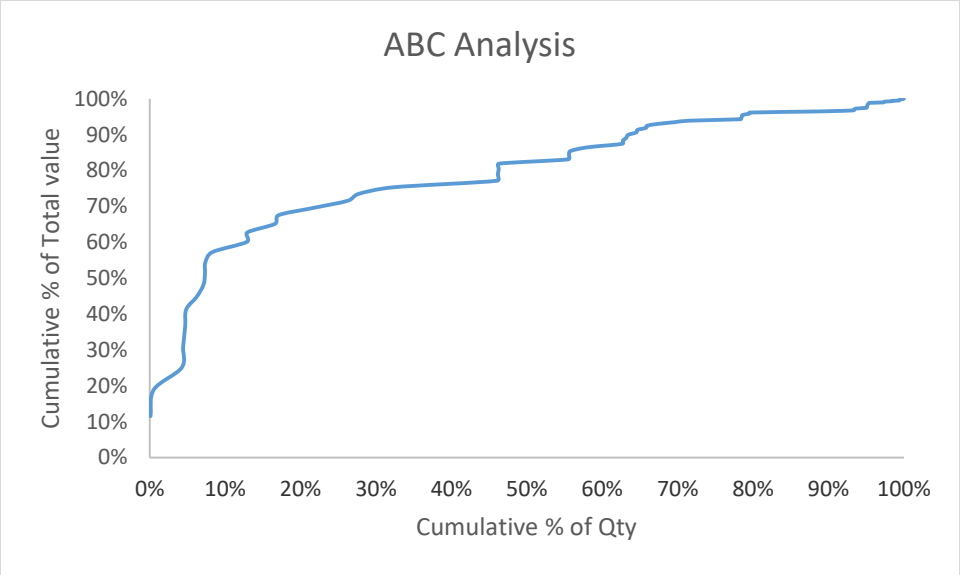



**Figure 12: ABC analysis of Khunyangu Sub county Hospital 2016-2017**

On VEN analysis, 19.75% (*n*=37), 18.64% (*n*=8) and 61.6% (*n*=31) drugs were found to be V, E and N category items. These items accounted for 59.86% (Kes. 1,036,305), 9.67% (Kes. 167,400) and 30.47% (Kes. 527,549) of ADE of the drug store as summarized in table 26.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 19.75% | 59.86% | 37 | 1036305 |
| E | 18.64% | 9.67% | 8 | 167400 |
| N | 61.60% | 30.47% | 31 | 527549 |

**Table 26: VEN analysis of Khunyangu Sub county Hospital 2016-2017**

From ABC-VEN matrix analysis in table 27 and table 28 below, there were 42 (27.58%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 13(50.97%) items in category II consisting of BE, BN and CE subgroups and 21 (21.45%) items in category III consisting of CN subgroup. These items accounted for 81.72% (Kes 1,414,805), 14.02% (Kes. 242,700) and 4.26% (Kes. 73,749) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 10 | BV | 8 | CV | 19 |
| E | AE | 1 | BE | 3 | CE | 4 |
| N | AN | 4 | BN | 6 | CN | 21 |

**Table 27: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 27.58% | 81.72% | 42 | 1414805 |
| II | 50.97% | 14.02% | 13 | 242700 |
| III | 21.45% | 4.26% | 21 | 73749 |

**Table 28: ABC-VEN matrix analysis 2016-2017**

#### 4.3.3.1 Nambale Sub County Hospital 2015-2016

For the year 2015-2016, total quantities of 69,345 drugs were purchased by Nambale Sub-County Hospital that amounted to a total expenditure of Kes 3,654,197. On ABC analysis, 19.43% (*n*=18), 39.69% (*n*=22) and 40.88% (*n*=70) drugs were found to be A, B and C category items that accounted for 67.25% (Kes. 2,457,340), 23.16% (Kes. 896,160) and 9.6% (Kes. 350,697) of ADE of the drug store as shown in the figure 15 below and Appendix 5.

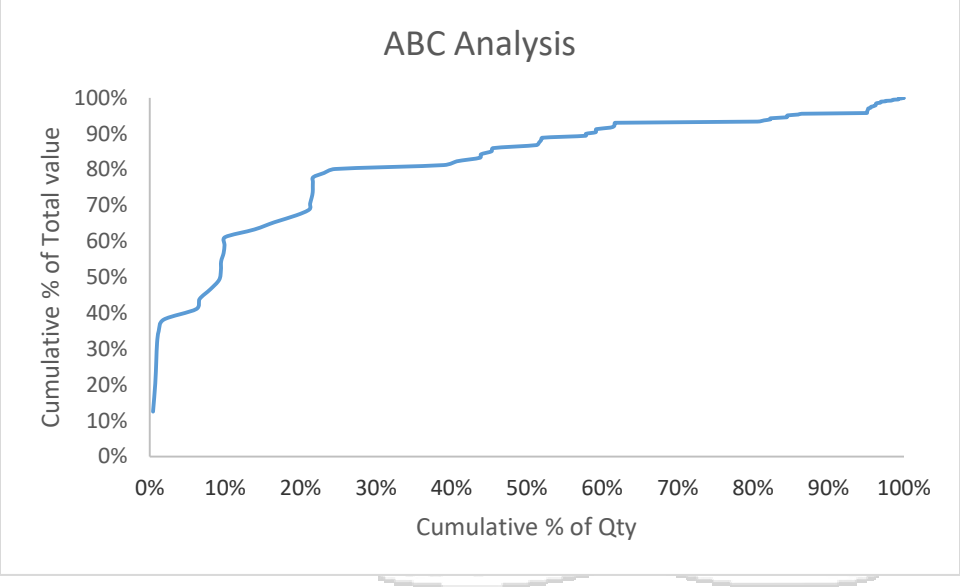



**Figure 13: ABC analysis of Nambale Sub county Hospital 2015-2016**

On VEN analysis, 28.36% (*n*=29), 2.45% (*n*=3) and 69.19% (*n*=78) drugs were found to be V, E and N category items. These items accounted for 24.07% (Kes. 879,704), 0.52% (Kes. 18,840) and 75.41% (Kes. 2,755,653) of ADE of the drug store as summarized in table 29.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 28.36% | 24.07% | 29 | 879704 |
| E | 2.45% | 0.52% | 3 | 18840 |
| N | 69.19% | 75.41% | 78 | 2755653 |

**Table 29: VEN analysis of Nambale Sub county Hospital 2015-2016**

From ABC-VEN matrix analysis in table 30 and table 31 below, there were 41 (35.13%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 18(38.93%) items in category II consisting of BE, BN and CE subgroups and 51 (25.94%) items in category III consisting of CN subgroup. These items accounted for 77.15% (Kes 2,819,294), 16.45% (Kes. 601,170) and 6.4% (Kes. 233,733) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 6 | BV | 7 | CV | 16 |
| E | AE | 0 | BE | 0 | CE | 3 |
| N | AN | 12 | BN | 15 | CN | 51 |

**Table 30: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 35.13% | 77.15% | 41 | 2819294 |
| II | 38.93% | 16.45% | 18 | 601170 |
| III | 25.94% | 6.40% | 51 | 233733 |

**Table 31: ABC-VEN matrix analysis 2015-2016**

### 4.3.3.2 Nambale Sub county Hospital 2016-2017

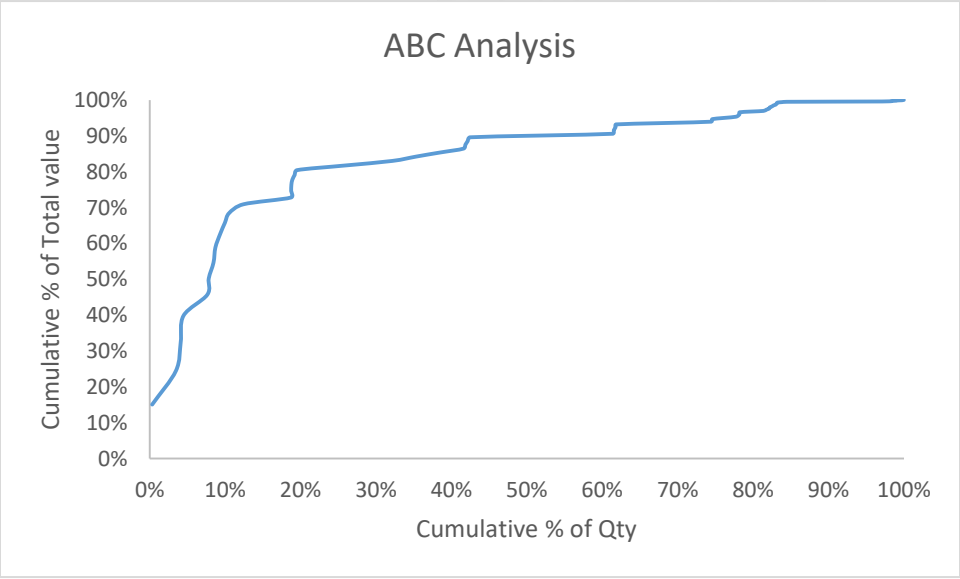



**Figure 14: ABC analysis of Nambale Sub county Hospital 2016-2017**

For the year 2016-2017, total quantities of 15,860 drugs were purchased by Nambale Sub-County Hospital that amounted to a total expenditure of Kes 1,326,579. On ABC analysis, 12.42% (*n*=12), 30.06% (*n*=14) and 57.52% (*n*=32) drugs were found to be A, B and C category items and

accounted for 70.92% (Kes. 940,800), 18.68% (Kes. 247,750) and 10.4% (Kes. 138,029) of ADE of the drug store as shown in the figure 16 above and Appendix 6.

On VEN analysis, 31.08% (*n*=18), 1.01% (*n*=2) and 27.91% (*n*=28) drugs were found to be V, E and N category items. These items accounted for 43.37% (Kes. 575,300), 0.47% (Kes. 6,200) and 56.17% (Kes. 745,079) of ADE of the drug store as summarized in table 32.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 31.08% | 43.37% | 18 | 575300 |
| E | 1.01% | 0.47% | 2 | 6200 |
| N | 67.91% | 56.17% | 38 | 745079 |

**Table 32: VEN analysis of Nambale Sub county Hospital 2016-2017**

From ABC-VEN matrix analysis in table 33 and table 34 below, there were 36 (78.83%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 8(11.38%) items in category II consisting of BE, BN and CE subgroups and 9.37 (14%) items in category III consisting of CN subgroup. These items accounted for 87.3% (Kes 1,158,100), 8.9% (Kes. 118,100) and 3.8% (Kes. 50,379) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 5 | BV | 8 | CV | 16 |
| E | AE | 0 | BE | 0 | CE | 2 |
| N | AN | 7 | BN | 6 | CN | 14 |

**Table 33: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 78.83% | 87.30% | 36 | 1158100 |
| II | 11.38% | 8.90% | 8 | 118100 |
| III | 9.79% | 3.80% | 14 | 50379 |

**Table 34: ABC-VEN matrix analysis 2016-2017**

#### 4.3.4.1 Port Victoria Sub county Hospital 2015-2016

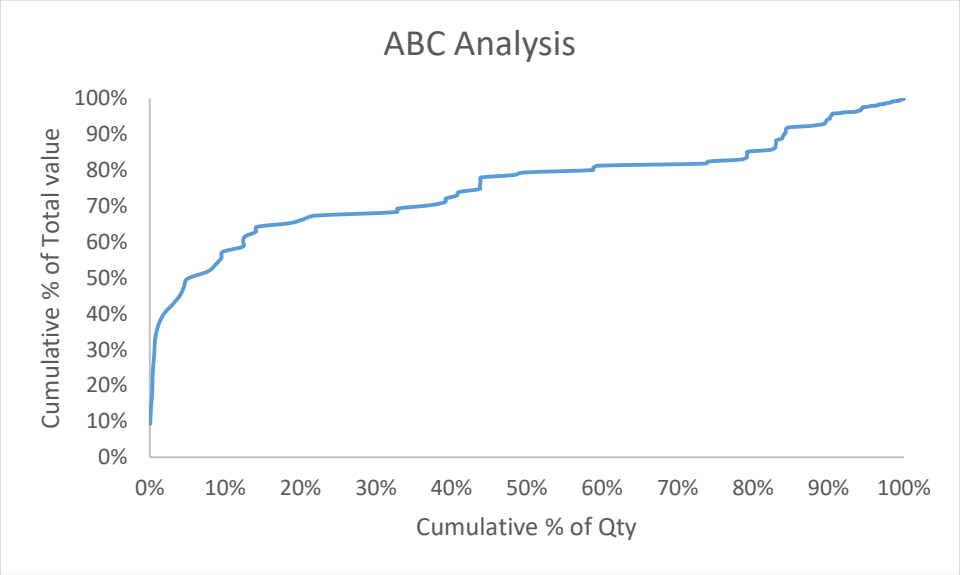



**Figure 15: ABC analysis of Port Victoria Sub county Hospital 2015-2016**

For the year 2015-2016, a total quantity of 158,847 drugs was purchased by Port Victoria Sub-County Hospital that amounted to a total expenditure of Kes 8,521,268. On ABC analysis, 14.18% (*n*=23), 69.86% (*n*=38) and 15.95% (*n*=83) drugs were found to be A, B and C category items respectively that accounted for 64.23% (Kes. 5,473,550), 25.72% (Kes. 2,191,658) and 10.05% (Kes. 856,060) of ADE of the drug store as shown in the figure 17 above and Appendix 7.

On VEN analysis, 22.53% (*n*=48), 0.67% (*n*=6) and 76.8% (*n*=90) drugs were found to be V, E and N category items. These items accounted for 37.25% (Kes. 3,174,050), 3.11% (Kes. 264,600) and 59.65% (Kes. 5,082,618) of ADE of the drug store as summarized in table 35.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 22.53% | 37.25% | 48 | 3174050 |
| E | 0.67% | 3.11% | 6 | 264600 |
| N | 76.80% | 59.65% | 90 | 5082618 |

**Table 35: VEN analysis of Port Victoria Sub County Hospital 2015-2016**

From ABC-VEN matrix analysis in table 36 and table 37 below, there were 63 (28.46%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 31(58.1%) items in category II consisting of BE, BN and CE subgroups and 13.44 (13.44%) items in category III consisting of CN subgroup. These items accounted for 74.87% (Kes 6,379,800), 19.43% (Kes. 1,655,908) and 5.7% (Kes. 485,560) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 8 | BV | 10 | CV | 30 |
| E | AE | 1 | BE | 2 | CE | 3 |
| N | AN | 14 | BN | 26 | CN | 50 |

**Table 36: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 28.46% | 74.87% | 63 | 6379800 |
| II | 58.10% | 19.43% | 31 | 1655908 |
| III | 13.44% | 5.70% | 50 | 485560 |

**Table 37: ABC-VEN matrix analysis 2015-2016**

### 4.3.4.2 Port Victoria Sub county Hospital 2016-2017

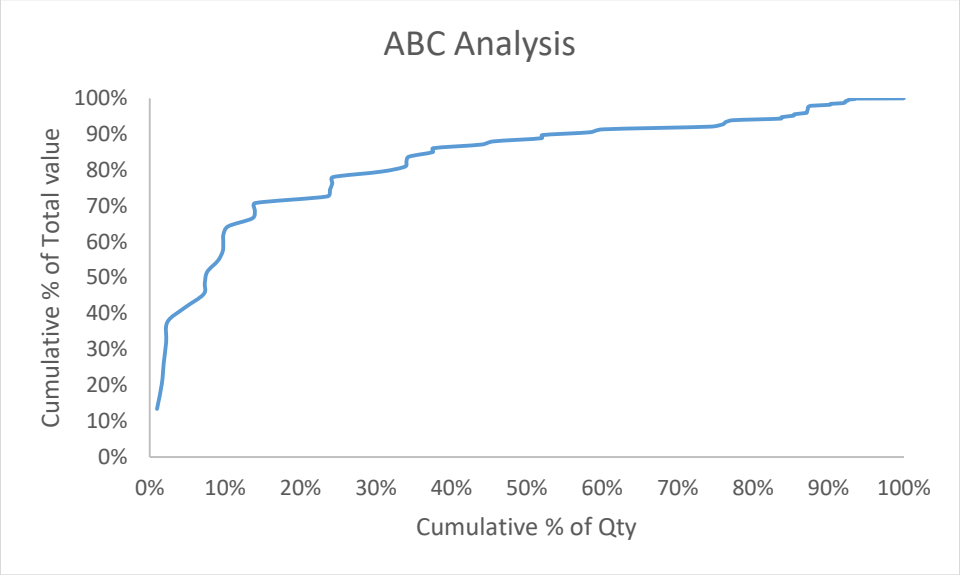



**Figure 16: ABC analysis of Port Victoria Sub county Hospital 2016-2017**

For the year 2016-2017, total quantities of 31,244 drugs were purchased by Port Victoria Sub-County Hospital that amounted to a total expenditure of Kes 2,243,423. On ABC analysis, 13.97% (*n*=17), 46.07% (*n*=16) and 39.97% (*n*=33) drugs were found to be A, B and C category items that accounted for 70.76% (Kes. 1,587,400), 20.56% (Kes. 461,194) and 8.68% (Kes. 194,829) of ADE of the drug store as shown in the figure 18 above and Appendix 8.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 44.04% | 35.16% | 32 | 788845 |
| E | 6.29% | 15.66% | 8 | 351400 |
| N | 49.67% | 49.17% | 26 | 1103178 |

**Table 38: VEN analysis of Port Victoria Sub county Hospital 2016-2017**

On VEN analysis, 44.04% (*n*=32), 6.29% (*n*=8) and 49.67% (*n*=26) drugs were found to be V, E and N category items. These items accounted for 35.16% (Kes. 788,845), 15.66% (Kes. 351,400) and 49.17% (Kes. 1,103,178) of ADE of the drug store as summarized in table 38.

From ABC-VEN matrix analysis in table 39 and table 40 below, there were 41 (48.12%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 12(32.93%) items in category II consisting of BE, BN and CE subgroups and 13 (18.94%) items in category III consisting of CN subgroup. These items accounted for 83.34% (Kes 1,869,745), 12.71% (Kes. 285,094) and 3.95% (Kes. 88,584) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 7 | BV | 6 | CV | 19 |
| E | AE | 3 | BE | 3 | CE | 2 |
| N | AN | 7 | BN | 7 | CN | 12 |

**Table 39: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 48.12% | 83.34% | 41 | 1869745 |
| II | 32.93% | 12.71% | 12 | 285094 |
| III | 18.94% | 3.95% | 13 | 88584 |

**Table 40: ABC-VEN matrix analysis 2016-2017**

#### 4.3.5.1 Sio Port Sub county Hospital 2015-2016

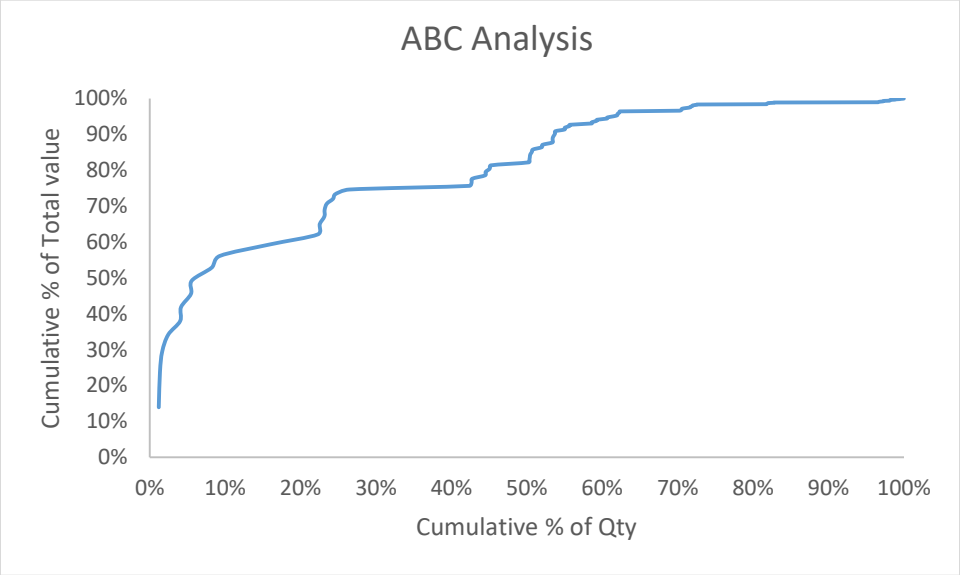



**Figure 17: ABC analysis of Sio Port Sub county Hospital 2015-2016**

For the year 2015-2016, total quantities of 37,702 drugs were purchased by Sio Port Sub-County Hospital that amounted to a total expenditure of Kes 2,735,027. On ABC analysis, 23.48% (*n*=16), 30.27% (*n*=23) and 46.25% (*n*=68) drugs were found to be A, B and C category items that accounted for 70.7% (Kes. 1,933,600), 19.6% (Kes. 536,100) and 9.7% (Kes. 265,327) of ADE of the drug store as shown in the figure 19 and Appendix 9.

On VEN analysis, 20.9% (*n*=41), 6.87% (*n*=3) and 72.23% (*n*=63) drugs were found to be V, E and N category items that accounted for 34.79% (Kes. 951,542), 1.94% (Kes. 53,040) and 63.27% (Kes. 1,730,445) of ADE of the drug store as summarized in table 41.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 20.90% | 34.79% | 41 | 951542 |
| E | 6.87% | 1.94% | 3 | 53040 |
| N | 72.23% | 63.27% | 63 | 1730445 |

**Table 41: VEN analysis of Sio Port Sub county Hospital 2015-2016**

From ABC-VEN matrix analysis in table 42 and table 43 below, there were 50 (28.36%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 16(29.24%) items in category II consisting of BE, BN and CE subgroups and 41 (42.4%) items in category III consisting of CN subgroup that accounted for 80.42% (Kes 2,199,422), 13.67% (Kes. 373,960) and 5.91% (Kes. 161,625) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 7 | BV | 8 | CV | 26 |
| E | AE | 0 | BE | 2 | CE | 1 |
| N | AN | 9 | BN | 13 | CN | 41 |

**Table 42: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 28.36% | 80.42% | 50 | 2199442 |
| II | 29.24% | 13.67% | 16 | 373960 |
| III | 42.40% | 5.91% | 41 | 161625 |

**Table 43: ABC-VEN matrix analysis 2015-2016**

#### 4.3.5.2 Sio Port Sub County Hospital 2016-2017

For the year 2016-2017, total quantities of 9,155 drugs were purchased by Sio Port Sub-County Hospital, amounting to a total expenditure of Kes 2,735,027. On ABC analysis, 15.29% (*n*=5), 24.88% (*n*=7) and 59.83% (*n*=21) drugs were found to be A, B and C category items that accounted for 67.59% (Kes. 461,500), 24.62% (Kes. 168,100) and 7.79% (Kes. 53,175) of ADE of the drug store as shown in the figure 20 and Appendix 10.

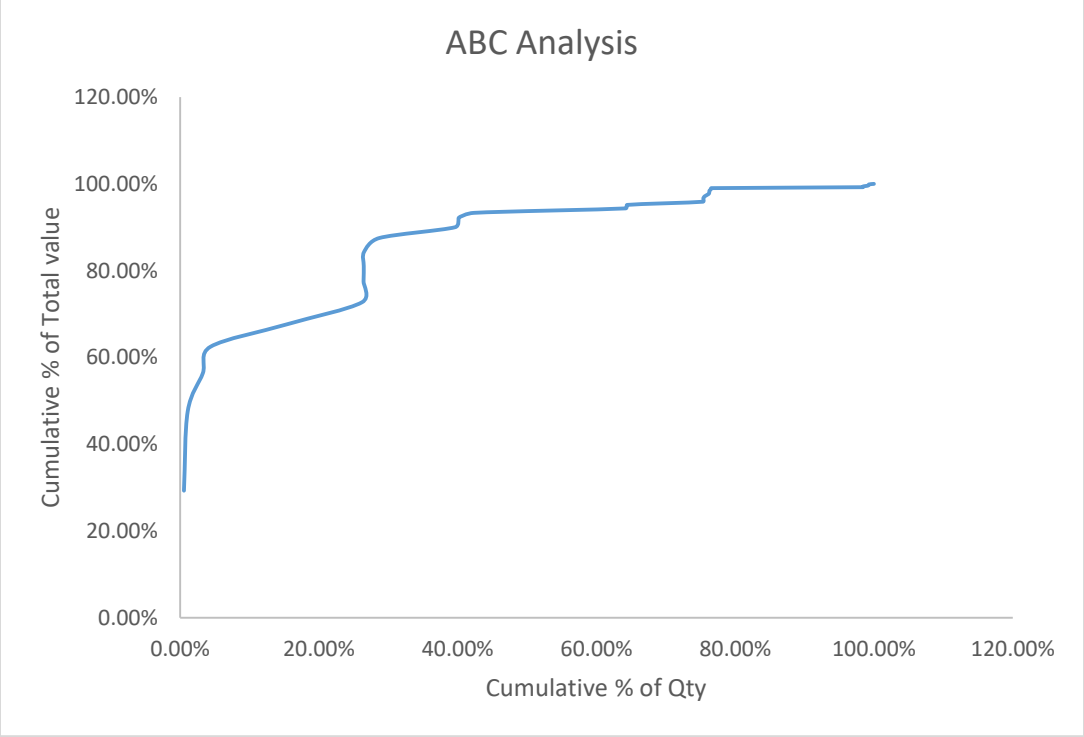



**Figure 18: ABC analysis of Sio Port Sub county Hospital 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 13.26% | 37.74% | 9 | 257660 |
| E | 0.05% | 0.03% | 1 | 225 |
| N | 86.68% | 62.23% | 23 | 424890 |

**Table 44: VEN analysis of Sio Port sub county Hospital 2016-2017**

On VEN analysis, 13.26% (*n*=9), 0.05% (*n*=1) and 86.68% (*n*=23) drugs were found to be V, E and N category items. These items accounted for 37.74% (Kes. 257,660), 0.03% (Kes. 225) and 62.23% (Kes. 424,890) of ADE of the drug store as summarized in table 44.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 2 | BV | 1 | CV | 6 |
| E | AE | 0 | BE | 0 | CE | 1 |
| N | AN | 3 | BN | 6 | CN | 0 |

**Table 45: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 17.06% | 70.54% | 11 | 481650 |
| II | 24.39% | 22.46% | 7 | 153325 |
| III | 58.55% | 7.00% | 15 | 47800 |

**Table 46: ABC-VEN matrix analysis 2016-2017**

From ABC-VEN matrix analysis in table 45 and table 46 below, there were 11 (17.06%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 7(24.39%) items in category II consisting of BE, BN and CE subgroups and 15 (58.55%) items in category III consisting of CN subgroup that accounted for 70.54% (Kes 2,481,650), 22.46% (Kes. 153,325) and 7% (Kes. 47,800) of ADE of the drugs respectively.

#### 4.3.6.1 Teso North Sub county Hospital 2015-2016

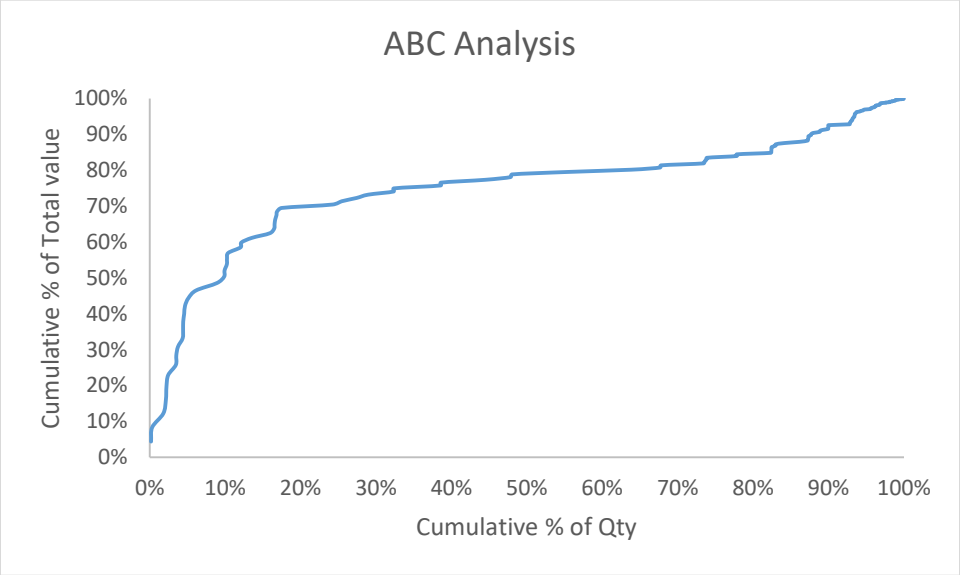



**Figure 19: ABC analysis of Teso North Sub county Hospital 2015-2016**

For the year 2015-2016, total quantities of 177,106 drugs were purchased by Teso North Sub-County Hospital that amounted to a total expenditure of Kes 9,491,238. On ABC analysis, 13.55% (*n*=25), 74.15% (*n*=43) and 12.30% (*n*=81) drugs were found to be A, B and C category items that accounted for 61.19% (Kes. 5,807,300), 28.66% (Kes. 2,720,370) and 10.15% (Kes. 963,568) of ADE of the drug store as shown in the figure 21 and Appendix 11.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 44.22% | 43.44% | 50 | 4123210 |
| E | 3.88% | 2.08% | 6 | 196948 |
| N | 51.90% | 54.48% | 93 | 5171080 |

**Table 47: VEN analysis of Teso North Sub county Hospital 2015-2016**

On VEN analysis, 44.22% (*n*=50), 03.88% (*n*=6) and 51.9% (*n*=93) drugs were found to be V, E and N category items. These items accounted for 43.44% (Kes. 4,123,210), 2.08% (Kes. 196,948) and 51.9% (Kes. 5,171,080) of ADE of the drug store as summarized in table 47.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 11 | BV | 16 | CV | 22 |
| E | AE | 0 | BE | 3 | CE | 3 |
| N | AN | 14 | BN | 24 | CN | 56 |

**Table 48: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 53.17% | 76.05% | 63 | 7218490 |
| II | 38.23% | 17.28% | 30 | 1640128 |
| III | 8.60% | 6.67% | 56 | 632620 |

**Table 49: ABC-VEN matrix analysis 2015-2016**

From ABC-VEN matrix analysis in table 48 and table 49 below, there were 63 (53.17%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 30 (38.23%) items in category II consisting of BE, BN and CE subgroups and 56 (8.60%) items in category III consisting of CN subgroup and accounted for 76.05% (Kes 7,218,490), 22.46% (Kes. 1,640,128) and 6.67% (Kes. 632,620) of ADE of the drugs respectively.

### 4.3.6.2 Teso North Sub county Hospital 2016-2017

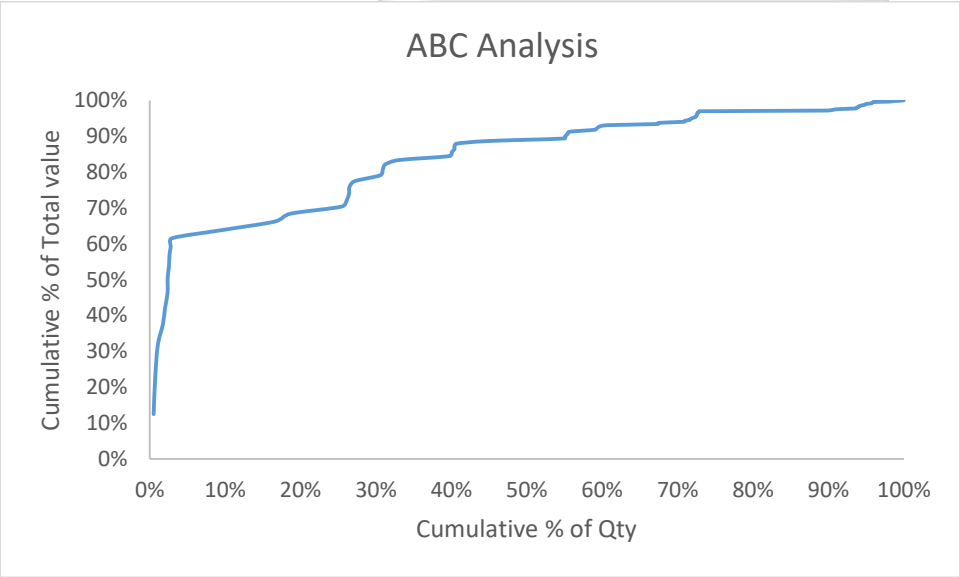



**Figure 20: ABC analysis of Teso North Sub county Hospital 2016-2017**

For the year 2016-2017, total quantities of 29,297 drugs were purchased by Teso North Sub-County Hospital that amounted to a total expenditure of Kes 2,994,421. On ABC analysis, 18.65% (*n*=14), 36.77% (*n*=18) and 44.4% (*n*=49) drugs were found to be A, B and C category items that accounted for 68.6% (Kes. 2,048,300), 22.25% (Kes. 666,380) and 31.6% (Kes. 946,121) of ADE of the drug store as shown in the figure 22 and Appendix 12.

On VEN analysis, 36.57% (*n*=36), 7.75% (*n*=8) and 55.67% (*n*=37) drugs were found to be V, E and N category items. These items accounted for 65.68% (Kes. 1,966,850), 2.34% (Kes. 69,945) and 31.98% (Kes. 957,626) of ADE of the drug store as summarized in table 50.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 36.57% | 65.68% | 36 | 1966850 |
| E | 7.75% | 2.34% | 8 | 69945 |
| N | 55.67% | 31.98% | 37 | 957626 |

**Table 50: VEN analysis of Teso North Sub county Hospital 2016-2017**

From ABC-VEN matrix analysis in table 51 and table 52 below, there were 40 (46.15%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 18 (24.18%) items in category II consisting of BE, BN and CE subgroups and 23 (29.67%) items in category III consisting of CN subgroup. These items accounted for 82.57% (Kes 2,472,350), 12.51% (Kes. 374,525) and 4.93% (Kes. 147,546) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 14 | BV | 8 | CV | 19 |
| E | AE | 0 | BE | 1 | CE | 7 |
| N | AN | 0 | BN | 9 | CN | 23 |

**Table 51: ABC-VEN matrix analysis 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 46.15% | 82.57% | 40 | 2472350 |
| II | 24.18% | 12.51% | 18 | 374525 |
| III | 29.67% | 4.93% | 23 | 147546 |

**Table 52: ABC-VEN matrix analysis 2016-2017**

### 4.3.7.1 Teso South Sub county Hospital 2015-2016

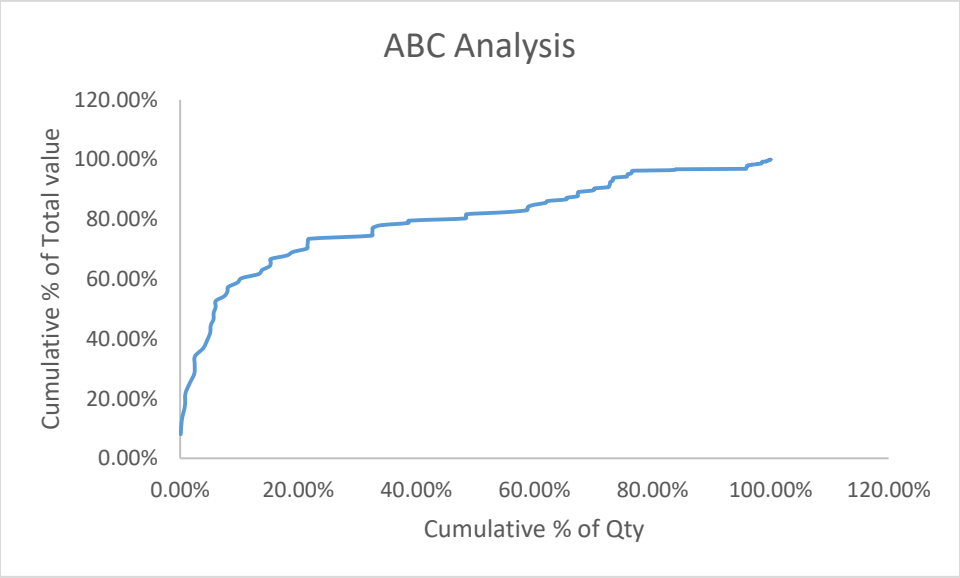



**Figure 21: ABC analysis of Teso South sub county Hospital 2015-2016**

For the year 2015-2016, total quantities of 191,639 drugs were purchased by Teso South Sub-County Hospital that amounted to a total expenditure of Kes 9,892,058. On ABC analysis, 13.89% (*n*=23), 55.92% (*n*=33) and 30.19% (*n*=78) drugs were found to be A, B and C category items respectively and accounted for 63.04% (Kes. 6,235,550), 26.57% (Kes. 2,628,078) and 10.4% (Kes. 1,028,430) of ADE of the drug store as shown in the figure 23 and Appendix 13.

On VEN analysis, 42.61% (*n*=47), 1.43% (*n*=6) and 55.96% (*n*=81) drugs were found to be V, E and N category items. These items accounted for 30.14% (Kes. 2,981,835), 3.23% (Kes. 319,700) and 66.62% (Kes. 6,590,523) of ADE of the drug store as summarized in table 53.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 42.61% | 30.14% | 47 | 2981835 |
| E | 1.43% | 3.23% | 6 | 319700 |
| N | 55.96% | 66.62% | 81 | 6590523 |

**Table 53: VEN analysis of Teso South Sub county Hospital 2016-2016**

From ABC-VEN matrix analysis in table 54 and table 55 below, there were 62 (52.47%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 26 (39.11%) items in category II consisting of BE, BN and CE subgroups and 46 (8.42%) items in category III consisting of CN subgroup. These items accounted for 75.19% (Kes 7,437,885), 18.4% (Kes. 1,820,228) and 6.41% (Kes. 633,945) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 7 | BV | 11 | CV | 29 |
| E | AE | 1 | BE | 1 | CE | 4 |
| N | AN | 15 | BN | 21 | CN | 45 |

**Table 54: ABC-VEN matrix 2015-2016**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 52.47% | 75.19% | 62 | 7437885 |
| II | 39.11% | 18.40% | 26 | 1820228 |
| III | 8.42% | 6.41% | 46 | 633945 |

**Table 55: ABC-VEN matrix analysis 2015-2016**

### 4.3.7.2 Teso South Sub county Hospital 2016-2017

For the year 2015-2016, total quantities of 17,726 drugs were purchased by Teso South Sub-County Hospital that amounted to a total expenditure of Kes 1,099,415. On ABC analysis, 17.43% (*n*=9), 16.89% (*n*=12) and 65.68% (*n*=22) drugs were found to be A, B and C category items that

accounted for 68.87% (Kes. 757,190), 21.34% (Kes. 234,636) and 9.79% (Kes. 107,589) of ADE of the drug store as shown in the figure 24 and Appendix 14.

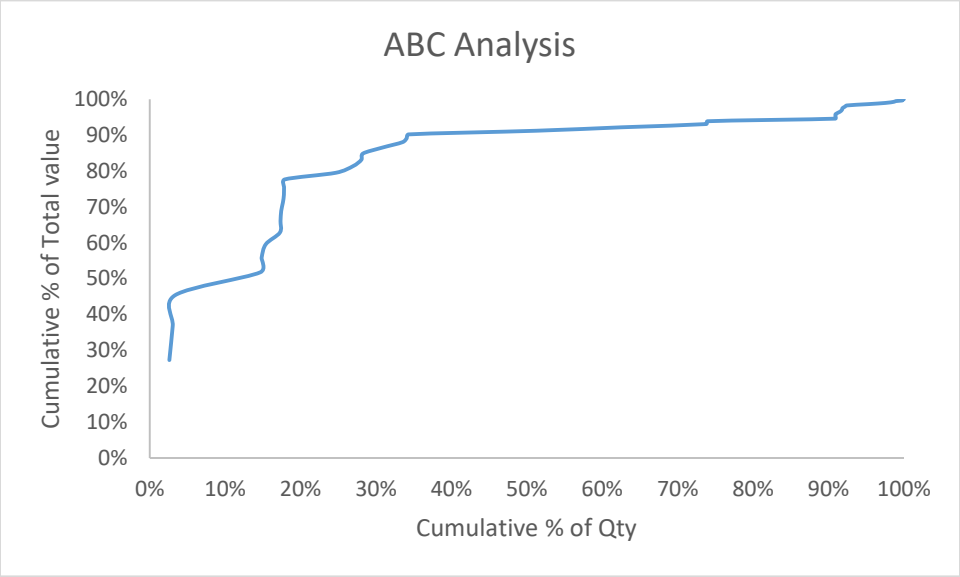



**Figure 22: ABC analysis of Teso South Sub county Hospital 2016-2017**

On VEN analysis, 28.55% (*n*=21), 0.62% (*n*=2) and 70.83% (*n*=24) drugs were found to be V, E and N category items. These items accounted for 37.32% (Kes. 410,356), 1.17% (Kes. 12,900) and 61.5% (Kes. 676,159) of ADE of the drug store as summarized in table 56.

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| V | 28.55% | 37.32% | 21 | 410356 |
| E | 0.62% | 1.17% | 2 | 12900 |
| N | 70.83% | 61.50% | 20 | 676159 |

**Table 56: VEN analysis of Teso South Sub county Hospital 2016-2017**

From ABC-VEN matrix analysis in table 57 and table 58 below, there were 27 (45.11%) items in category I consisting of AV, AE, AN, BV and CV subgroups, 6 (7.76%) items in category II consisting of BE, BN and CE subgroups and 10(47.13%) items in category III consisting of CN subgroup. These items accounted for 85.25% (Kes 937,296), 9.12% (Kes. 100,300) and 5.62% (Kes. 61,819) of ADE of the drugs respectively.

| | A | | B | | C | |
|---|---|---|---|---|---|---|
| | Combined category | No of items | Combined category | No of items | Combined category | No of items |
| V | AV | 3 | BV | 7 | CV | 11 |
| E | AE | 0 | BE | 1 | CE | 1 |
| N | AN | 6 | BN | 4 | CN | 10 |

**Table 57: ABC-VEN matrix 2016-2017**

| Category | % Item | % ADE | No of items | Total Value (KSH) |
|---|---|---|---|---|
| I | 45.11% | 85.25% | 27 | 937296 |
| II | 7.76% | 9.12% | 6 | 100300 |
| III | 47.13% | 5.62% | 10 | 61819 |

**Table 58: ABC-VEN matrix analysis 2016-2017**

### 4.4 Human Resource for Health for Pharmaceutical Supply Chain Management

#### 4.4.1 Officer, solely responsible for supply chain management

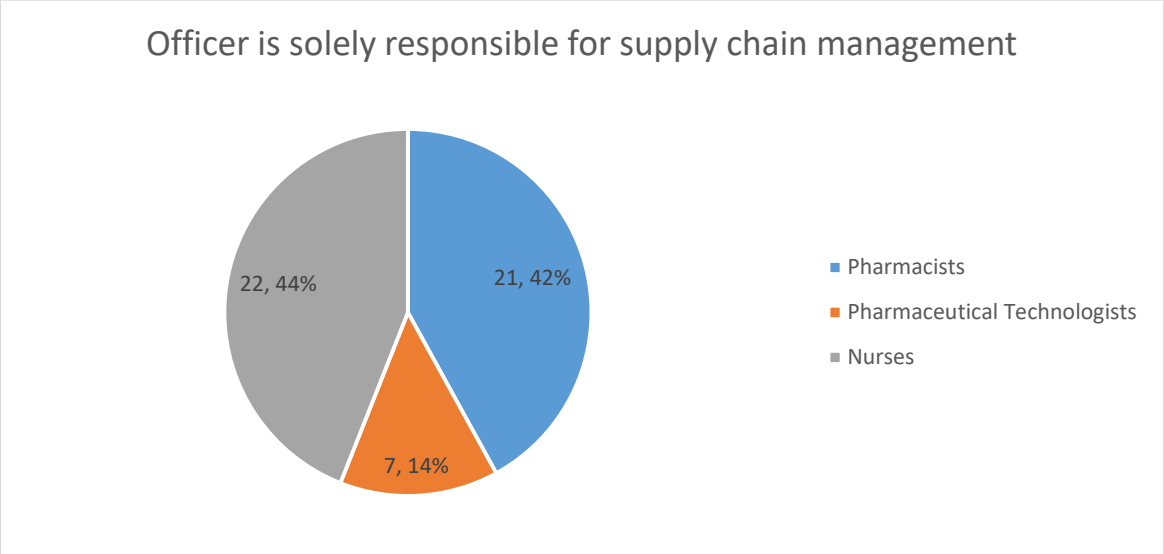



**Figure 23: Officer, solely responsible for supply chain management**

The respondents were asked to indicate the officer solely responsible for supply chain management in the facility. From the findings, 44% said that nurses were responsible, 42% said that pharmacists were responsible while 14% said that pharmaceutical technologists were responsible as shown in figure 25 above.

#### 4.4.2 Staff training on supply chain management

The participants were asked to indicate the number of trained staff and the number of staff who were able to report on sub-standard commodities as well as patient side effects from medicines

after their administration. From the findings, at least 1 pharmacist, 1 pharmaceutical technologists, and 2 nurses were trained on inventory management practices. At least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were trained on rational drug use as summarized on table 59 below.

| | | N | Mean |
|---|---|---|---|
| **Table 59: Trained staff on supply chain management** | How many Pharmacists in the facility are trained on Inventory management practices | 50 | 1.16 |
| | How many Pharmaceutical Technologists in the facility are trained on Inventory management practices | 50 | 1.12 |
| | How many Nurses in the facility are trained on Inventory management practices | 50 | 1.48 |
| | How many Pharmacists in the facility are trained on Rational drug use | 50 | 1 |
| | How many Pharmaceutical Technologists in the facility are trained on Rational drug use | 50 | 0.96 |
| | How many Nurses in the facility are trained on Rational drug use | 50 | 1 |
| | How many Pharmacists in the facility are trained on Quantification | 50 | 0.76 |
| | How many Pharmaceutical Technologists in the facility are trained on Quantification | 50 | 0.88 |
| | How many Nurses in the facility are trained on Quantification | 50 | 0.92 |
| | How many Pharmacists in the facility are trained on Forecasting | 50 | 0.76 |
| | How many Pharmaceutical Technologists in the facility are trained in Forecasting | 50 | 0.8 |
| | How many Nurses in the facility are trained on Forecasting | 50 | 0.92 |
| | How many Pharmacists in the facility are trained in Supply chain planning and mapping | 50 | 0.16 |
| | How many Pharmaceutical Technologists in the facility are trained in Supply chain planning and mapping | 50 | 0.08 |
| | How many Nurses in the facility are trained in Supply chain planning and mapping | 50 | 0.16 |
| | How many of the Pharmacists are able to report on sub-standard commodities as well as patient side effects from medicines after their administration? | 50 | 0.76 |
| | How many of the Pharmaceutical Technologists are able to report on sub-standard commodities as well as patient side effects from medicines after their administration? | 50 | 0.88 |
| | How many of the Nurses are able to report on sub-standard commodities as well as patient side effects from medicines after their administration? | 50 | 1.68 |
| | Valid N (list wise) | 50 | |
| **Table 60: Pharmacovigilance reporting forms** | Are Yellow form reporting forms available at the facility? Pharmacists | YES | 76.00% |
| | | NO | 24.00% |
| | Are Yellow form reporting forms available at the facility? Pharmaceutical Technologists | YES | 28.00% |
| | | NO | 72.00% |
| | Are Yellow form reporting forms available at the facility? Nurses | YES | 44.00% |
| | | NO | 56.00% |
| | Are Pink form reporting forms available at the facility? Pharmacists | YES | 16.00% |
| | | NO | 84.00% |
| | Are Pink form reporting forms available at the facility? Pharmaceutical Technologists | YES | 16.00% |
| | | NO | 84.00% |
| | Are Pink form reporting forms available at the facility? Nurses | YES | 4.00% |

| | | | |
|---|---|---|---|
| | | NO | 96.00% |
| | Are Alert card reporting forms available at the facility? Pharmacists | YES | 44.00% |
| | | NO | 56.00% |
| | Are Alert card reporting forms available at the facility? Pharmaceutical Technologists | YES | 8.00% |
| | | NO | 92.00% |
| | Are Alert card reporting forms available at the facility? Nurses | YES | 20.00% |
| | | NO | 80.00% |
| **Table 61: SMC training** | Are SCM training conducted in the county done to your satisfaction? Pharmacists | YES | 44.00% |
| | | NO | 56.00% |
| | Are SCM training conducted in the county done to your satisfaction? Pharmaceutical Technologists | YES | 16.00% |
| | | NO | 84.00% |
| | Are SCM training conducted in the county done to your satisfaction? Nurses | YES | 8.00% |
| | | NO | 92.00% |

From table 59 above, at least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were trained on pharmaceutical commodity quantification. At least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were trained on pharmaceutical commodity forecasting. At least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were trained on supply chain planning and mapping and at least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were able to report on sub-standard commodities as well as patient side effects from medicines after their administration.

### 4.4.3 Reporting forms

The participants were asked whether pharmacovigilance reporting forms were available in the facilities. From the findings, 76% of pharmacists, 28% of pharmaceutical technologists and 72% of nurses said that Yellow forms were available at the facility. 84% of pharmacists, 84% of pharmaceutical technologists and 96% of nurses said that Pink forms was available at the facility and 56% of pharmacists, 8% of pharmaceutical technologists and 20% of nurses said that Alert cards were available at the facility. This is summarized in table 60 above

### 4.4.4 SCM training

The participants were also asked whether SCM training conducted in the county was done to their satisfaction. From the findings, 44% of pharmacists, 16% of pharmaceutical technologists and 8% of nurses said the SCM training were conducted in the county to their satisfaction as shown in table 61 above.

The participants were asked about their opinion on what needs to change on how SMC trainings were being conducted in the county. From the findings, 22% of the respondents said there was need more trainings on commodity management, 17% of the respondents said rotational training among the staff should be enforced, 17% of the respondents said that participation of lower-level officers should be included in the training, 11% of the respondents insisted on the inclusion of other cadres whereas 11% of the respondents said the training should be made more frequent as shown in figure 26 below.

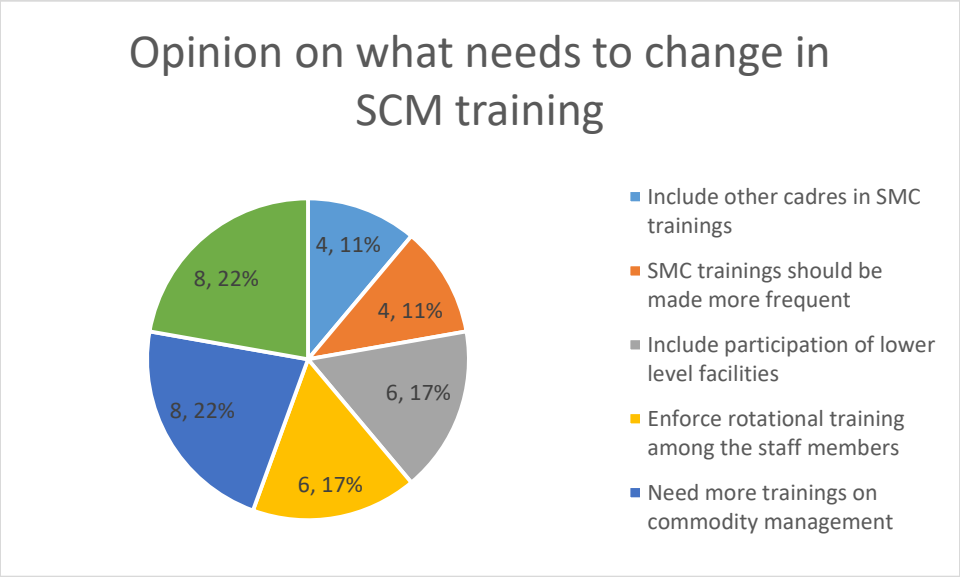



**Figure 24: Opinion on what needs to change in SMC training**

### 4.4.5 Reference materials

The respondents were asked about the reference materials in their facilities. From the findings, 32% of the respondents said they had the Drug Formulary, 40% of the respondents said they had the Essential Medicines List, 40% of the respondents said they had the Standard Treatment Guidelines in their facilities. 56% of the respondents said they had all the Pharmacovigilance tools available in their facilities and 48% of the respondents said they had the Pediatric Treatment Protocols reference materials needed to perform departmental duties optimally as shown in table 62 below.

| | | Count | Column N % |
|---|---|---|---|
| Do you have the Drug Formulary reference materials you need to perform your departmental duties optimally? | YES | 16 | 32.0% |
| | NO | 34 | 68.0% |
| Do you have the Essential Medicines List reference materials you need to perform your departmental duties optimally? | YES | 20 | 40.0% |
| | NO | 30 | 60.0% |
| Do you have the Standard Treatment Guidelines reference materials you need to perform your departmental duties optimally? | YES | 20 | 40.0% |
| | NO | 30 | 60.0% |
| Do you have the Pharmacovigilance tools reference materials you need to perform your departmental duties optimally? | YES | 28 | 56.0% |
| | NO | 22 | 44.0% |
| Do you have the Pediatric treatment protocols reference materials you need to perform your departmental duties optimally? | YES | 24 | 48.0% |
| | NO | 26 | 52.0% |

**Table 62: Reference materials**

### 4.4.6 Standard Operating Procedures

The respondents were asked whether the facilities had all the Standard Operating Procedures. From the findings, 80% of the respondents said they had Standard Operating Procedures for Good Storage Practices while 72% of the respondents said they had Standard Operating Procedures for Good Dispensing Practices. 72% of the respondents said they had Standard Operating Procedures for Good Inventory Management Practices. This is summarized in table 63 below.

| | | Count | Column N % |
|---|---|---|---|
| Do you have Standard Operating Procedures for Good storage practices | YES | 40 | 80.0% |
| | NO | 10 | 20.0% |
| Do you have Standard Operating Procedures for Good dispensing practices | YES | 36 | 72.0% |
| | NO | 14 | 28.0% |
| Do you have Standard Operating Procedures for Good inventory management practices | YES | 36 | 72.0% |
| | NO | 14 | 28.0% |

**Table 63: Standard operating procedures**

### 4.4.10 SCM activity

The respondents were asked what activity of SCM they were particularly involved in. From the findings, 60% of the respondents said they were involved in commodity quantification while 24% of the respondents said they were involved in product selection. 8% of the respondents said they were involved in commodity procurement whereas 8% of the respondents said they were only involved in commodity distribution as shown in figure 28 below.

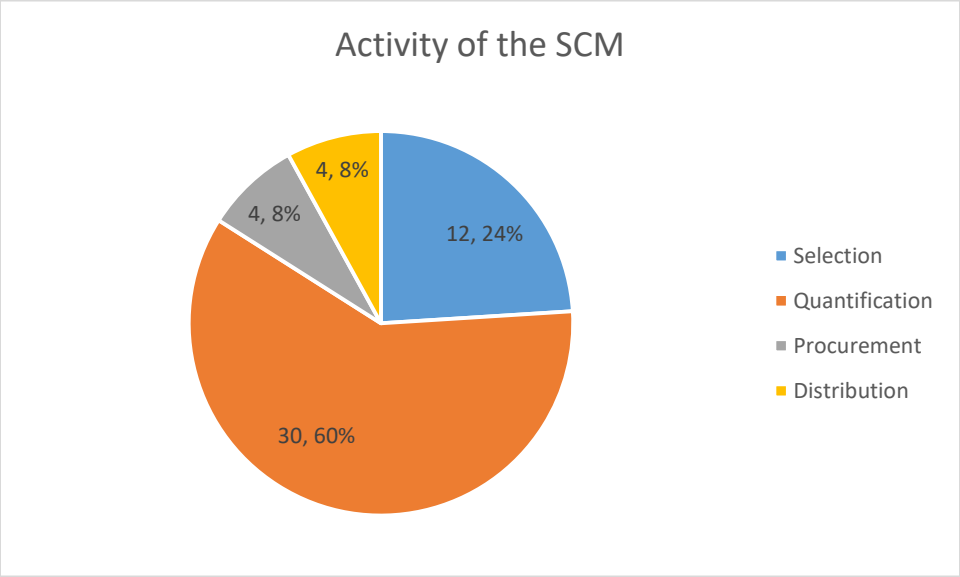



**Figure 25: SMC activity**

The respondents were asked to comment on the decisions they make for activity of SCM they were responsible for. From the findings, 48% of the respondents make patient summary reports that determine the order quantities, 26% of the respondents determine order quantities and what quantities to redistribute to other facilities, 17% of the respondents said they were involved in Both product selection and redistribution activities and 9% of the respondents said they ensure ethical process is followed during ordering process as shown in figure 29.

The respondents were asked about their opinions on what needed to change on how SCM was handled in the county. From the findings, 30% of the respondents said the lead time should be reduced, 26% of the respondents said the push system should be eliminated and 22% of the respondents said the procurement process needed to change. 15 of the respondents said the distribution schedule should be reviewed and 9% of the respondents said the proper infrastructure

and more training on supply chain management should be provided. This is summarized in figure 30 below.

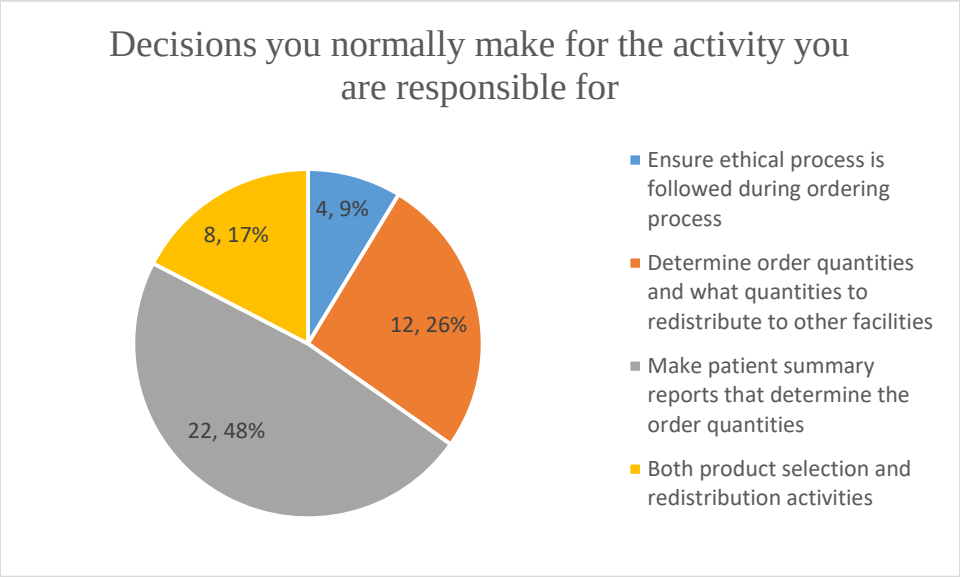



**Figure 26: Decision you normally make for the activity you are responsible for**

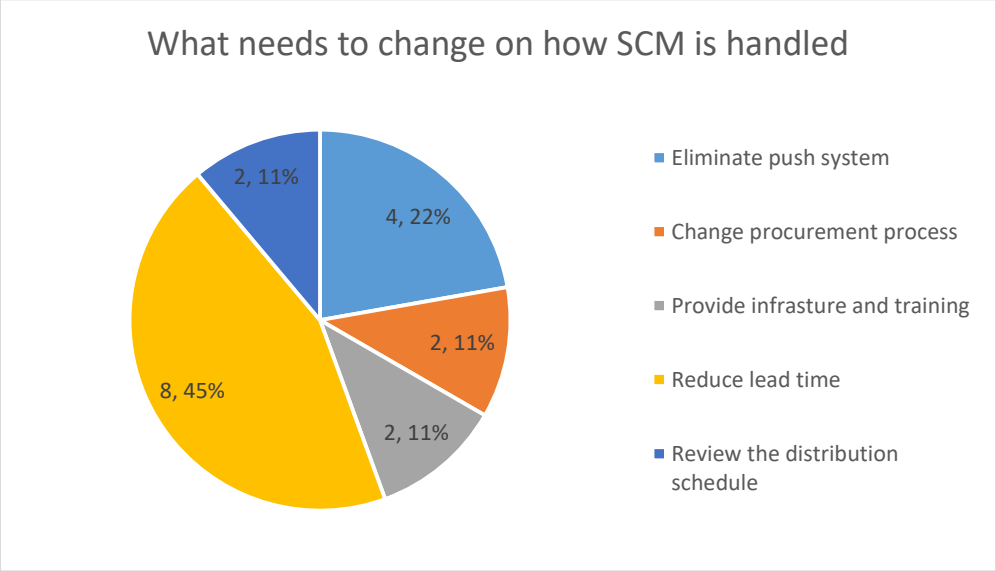



**Figure 27: What needs to change on how SMC is handled**

# CHAPTER FIVE: DISCUSSIONS

## 5.1 Logistic Management Information System (LMIS)

There is enough evidence from the findings according to table 7 that the LMIS reports and orders were always submitted to the relevant departments on time and that the data that was being submitted was normally accurate and complete. Emergency orders were rarely placed in the county health facilities, hence the buffer stock level were not really affected in Busia County.

According to table 8, reliable means of transport were used to ferry commodities to the facilities hence there was no threat to the delivery of essential supplies to respective SDPs in Busia County. However, according to figure 7, most of the facilities had a lead time of more than a quarter and experienced long delays in delivery of essential supplies to their respective SDPs.

According to table 9, most health facilities in Busia County are connected to the electricity and some embraced electronic management tools for commodity management. However only 17.8% of the facilities were using current commodity management software. This could be due to most of the staff not being trained on LMIS use according to table 10 and also because only 22% of the facilities were connected to the internet which could be a barrier to effective supply chain management. 49% of the respondents according to table 12 said that the LMIS was appropriate for them and for their use in their facilities, 70% said they could teach other members of staff how to use the LMIS. But only 17.2% of the respondents said that the LMIS was easy to use whereas 94% of the respondents said that they still needed more training on the LMIS aspect.

## 5.2 Efficient use of funds for procurement of medicines

### 5.2.1 ABC Analysis

From the ABC analyses of the seven hospitals, class A items consisting of about 10% of the items consumed 70% of the ADE while class C consisting of 70% of the items consumed only 10% of the ADE. Class A medicines are the “important few” while class C items are the “trivial many”. Therefore, class A items are supposed be actively managed while class C items should be passively managed if supply chain resources are to be used efficiently. Class B consisting of 18% of the number of items consumed 20% of the ADE these should be managed by exception.

As seen from the analysis of medical expenditure done at Muhimbili National Hospital in Tanzania by Tumaini (2013), the analysis produced similar results to the ones for Busia County. In the study, class A items consisting 10.5% of the number of items consumed 69.5% ADE. Class B items consisting of 18% of the number of items consumed 20.7% of the ADE and class C items

consisting of 71.3% of the items consumed 10% of the ADE. The study recommended that class A items being few and expensive require close day to day control. While class B and C need regular and infrequent reviews respectively. Devnani, Gupta, and Nigar in a study of a tertiary care teaching, research and referral institute in India in 2010 also found similar results. In their ABC analysis classes, A, B, and C consisting of 14%, 22%, and 64% respectively consumed 70%, 20% and 10% of the ADE respectively. Abate (2012) in the analysis of medicines inventory at Black Lion Hospital in Ethiopia got different results. In his study, Class A items were found to only represent 1.3 % of the items but 79% of the budget.

ABC analysis helps us to use supply chain management resources efficiently. In this case, by controlling only 10% of the items one is able to effectively manage 70% of the budget. But the one major limitation of ABC analysis is that it only gives importance to cost and demand attributes of the items during grouping. In a hospital setting, there may be low budget essential medicines that are either cheap in price or rarely used but are lifesaving. When using ABC analysis these items may fall in class B or C items hence they will not be effectively managed. Therefore, ABC analysis on its own is not enough for management of medicines in a hospital setting and there is therefore need for additional methods of medicines management to be considered or employed.

### 5.2.2 VEN Analysis

In the VEN analysis study of the seven hospitals, about 20% of the items in the essential medicines list were considered to be vital and accounted for about 40% of the ADE. Essential items were about 40% and Non-essential items were about 40% of the items and consumed about 40% and 20% of the ADE respectively. Comparison with similar studies shows high variation in the percentages of vital essential and non-essential items. Tumaini's (2012) study at Muhimbili National Hospital showed that only 50% of items were vital. 62% and 3% of the items were considered to be essential and non-essential respectively. On the other hand Devnani, Gupta, and Nigar (2010) in their study of a tertiary care teaching, research and referral institute in India showed that only 12% of their medicines were considered to be vital, 59% were essential and 29% were non-essential. This is because the VEN classification is subjective and different institution have different service profiles for this classification.

The main purpose of VEN analysis is to make sure critical items are available at all times. The vital items are an absolute necessity for the proper functioning of the institution and are therefore prioritized in the pharmaceutical supply chain. In this study, if VEN analysis is considered on its

own it would enable effective management of all vital items - 60% of the items accounting for 80% of the budget. This would be better in management in terms of criticality factor as it will help manage all vital items but considering the cost factor, it would effectively manage 80% of the budget as compared to ABC analysis which would only effectively manage 70% of the budget. A combination of both classification methods that take into account both criticality and the cost factor would be better to employ in a county hospital setting.

### 5.2.3 ABC-VEN Matrix Analysis

In a combination with both ABC and VEN analysis, both cost and criticality factors are taken into account. In a combination of ABC and VEN analysis, the resultant matrix makes it possible for health institutions to actively manage about 20% items belonging to category I, because they are either expensive or vital. The annual expenditure of these items as per the research was 75% of ADE of the pharmacy.

AV, AE and BV subgroups of category I are considered to be expensive items and their being out of stock in a health facility is unacceptable as they are either vital or essential. To prevent locking up of capital due to these items, low buffer stock needs to be maintained while keeping a strict vigil on the consumption level and the stock on hand. From the total cost analysis, purchasing costs are mostly fixed costs and low buffer stocks can be maintained by increasing frequency of ordering from the current quarterly orders to bimonthly or monthly orders, but with great consideration of the lead times. A two-bin method of ordering needs to be followed for these as this will reduce the risk of stock outs.

CV items are drugs of low cost but are of high criticality. Because this amount is small, these items can be procured once or twice a year as opposed to current quarterly procurement. This is because the items in this category have relatively low holding cost and would therefore not increase the total of inventory holding costs.

Items of category I, are considered to be both expensive and non-essential. The item in AN subgroup should be considered for removal from the essential medicines list so as to save costs and if not removed, items in this subgroup should be carefully monitored for rational use to prevent wastage.

The items in category II are those that can be ordered once or twice a year, thereby saving on purchasing costs. But since purchasing costs are mostly fixed costs, no saving will really be made. All in all, quarterly ordering method for category II items should be maintained.

Though the items in category III have low holding cost from the analysis done, the purchasing cost is fixed, therefore reducing the frequency of purchases of this category of items will not reduce the total pharmaceutical cost but increasing the frequency of ordering will surely reduce the holding costs. For these category of items, the current quarterly ordering should be maintained.
Similar studies showed comparable results. In the Devnani, Gupta, and Nigar (2010) study, category II items consisted of 54.63% of items that consumed 74.21% of the budgetary allocation of a tertiary teaching research and referral hospital in India. Category II items consisted of 23.38% of items that consumed 23.23% of the budget, while category III items consisted of 23.38% of the items that consumed 3.56% of the budgetary allocation of that particular hospital.

**5.3 Staff Training on Supply Chain Management and personnel staffing levels**

According to table 55, at least 1 pharmacist, 1 pharmaceutical technologists and 1 nurse were trained in inventory management practices, rational drug use, product quantification and forecasting and supply chain planning and mapping. This indicated that there was a shortage of trained pharmacy personnel in Busia County which could hinder access to medicine (Lubinga *et al*., 2014). According to figure 57, the trainings were not conducted to the satisfaction of the health care staff in Busia County.

There was enough evidence according to figure 25 of inadequate staffing personnel as nurses were the ones who were mostly responsible for supply chain management in most of the health facilities. MOH HIS Annual Report (2012) pointed out that the number of pharmaceutical personnel in Kenya stood at 510 and that of nurses was 20371 respectively. In the same year another report, The Economic Survey (2012) stated that for every 100,000 populations there were 20 doctors, 6 pharmacists, and 155 nurses. All these cadres are vital as they are involved in the efficient management of the supply chain either directly or indirectly. Most of the facilities did not have the reference materials needed to perform departmental duties optimally according to table 61, which would compromise quality patient care (Daniel *et al,* 2012).

## CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Introduction

This chapter presents a summary of the research project findings, conclusions, and recommendations of the study.

### 6.2 Summary of the findings

This research paper aimed at identifying areas for health system performance improvement with regards to the pharmaceutical commodity supply chain in Busia County. The research objectives formulated were:

1. To determine the efficiency of the Logistics Management Information System (LMIS) in Busia County in serving her needs.

2. To determine whether the county funds allocated for procurement of medicines are efficiently used.

3. To determine whether the staff managing the pharmaceutical supply chain system are well trained and of the right number.

The study sites were Busia County health institutions, namely the County Health office, the county store, the seven sub-county hospitals, nine health centers, sixteen dispensaries, both government sponsored and faith-based ones and also one private hospital that receives pharmaceutical commodities from the government, due to the fact that one of the sub counties did not have a faith-based dispensary or health centre. Staff that participated in this research are the ones who manage pharmaceutical commodity supply chain in their respective facilities and also those that make decisions at the county level. The respondents were: three personnel from the county level, 24 pharmacy personnel, 2 clinical officers and 26 nursing personnel. Data was collected from the main hospital pharmacies, hospital pharmacy stores, Comprehensive Care Clinic (CCC) pharmacies, the county store and the county health office at the county department of health headquarters. The data collection methods used were qualitative approach where observation and questionnaires were used to record key competency gaps of staff who use LMIS optimally at their workstations. In-depth interview using an interviewers guide were administered to county staff who make decisions regarding budgetary allocation for health. Self-administered questionnaires

were also administered in order to get information from staff who manage hospital pharmaceutical supply chain at different facility levels. For quantitative approach, ABC and VEN analysis were done so as to find out if the budgetary allocation for health was efficiently being used or not.

### 6.2.1 The Logistics Management Information System

From the analysis the current LMIS system in Busia County is not adequate and efficient enough to manage the needs of the county as seen from the respondents' reviews. From this study, 60% of the respondents stated that the LMIS system aided them in decision making with regard to the proper management of the pharmaceutical commodity supply chain. 70% of the respondents reported that they were able to teach their fellow staff on LMIS use whereas 72% of the respondents reported that they preferred the LMIS since it could make the necessary commodity adjustments that the facilities needed from time to time. However only 49% of the respondents stated that the software was appropriate for them and for their work and 94 % of the respondents further stated that they needed additional training on LMIS use. The county should put this into consideration, so as to enable proper functioning of the supply chain system in the county. The county should also consider to upgrade lower level facilities to use computerized electronic method of inventory management and reporting from the current manual one. This would go a long way to ensure timely reporting and proper control of inventory, hence improve supply chain management in Busia County.

There was enough evidence from the findings that the reports and orders were submitted to the relevant departments on time and that the LMIS data submitted is normally accurate and complete. Reliable means of transport were used to ferry commodities to the facilities hence there is no threat to the delivery of essential supplies to their respective SDPs. However, most of the facilities had experienced rather long lead time of up to more than a quarter and also experienced delays in delivery of essential supplies to their respective SDPs.

In as much as most of the higher level health facilities in Busia County were connected to electricity and embraced electronic management tools for commodity management, most of them were not using current commodity management software and also most of the facilities were not connected to the internet which could be a barrier to effective supply chain management.

### 6.2.2 Efficient use of funds for procurement of medicines

ABC and VEN analysis that were done in this study proved that category A, B and C items consumed 70%, 20% and 10% of the hospitals Annual Drug Expenditure (ADE) respectively. This

showed that funds allocated to procurement of medicines were utilized as efficiently as they were supposed to be. Despite this, the sub county budgetary allocation with the exception of the Busia County Referral Hospital declined in the 2016/2017 FY as compared to 2015/2016 FY. Quantities of medicines purchased for the 2016/2017 FY also reduced drastically as compared to 2015/2016 FY. This showed that the budgetary allocation was reduced, resources were probably scarce and therefore the County Referral Hospital had to be given priority over the other facilities in terms of resource allocation for procurement of medicines.

The research showed that use of ABC analysis alone for drug inventory in Busia county would help to effectively control about 10% of items that fall in the A category, which consumes about 70% of ADE of the hospital drug store, but it would also compromise the availability of vital items that fall in B and C categories. In the same way, use of VEN analysis alone would be ideal and could enable control to be exercised on the identified vital and/or essential items that account for 80% of the hospitals ADE. However, category A also contains desirable items which cannot be ignored completely. The combination of ABC and VEN analysis forms a matrix, which makes it possible to focus on about 10% of the items belonging to category I items, which need strict managerial control as these items are either expensive or vital. The annual expenditure of these items is about 70% of ADE of the hospital budget.

### 6.2.3 Personnel staffing levels and training on supply chain management

This study revealed that 44% of the respondents reported that the nursing officer in-charge was solely responsible for SCM of pharmaceutical commodities in their respective facilities. This figure is much higher than that of the 42% and 18% of respondents and who reported that the pharmacists and pharmaceutical technologists were responsible for supply chain management, a task that pharmacy staff should be managing. This is brought about by the inadequate number of pharmacy personnel in the county.

According to the Kenya Human Resource for Health Staffing Norms (Ministry of Health, 2014), a county referral hospital should have 21 pharmacy personnel: 11 pharmacists and 10 pharmaceutical technologists, a sub county hospital should have 6 pharmacists and 8 pharmaceutical technologists, a health centre should have a pharmacist and 3 pharmaceutical technologist and a dispensary a pharmaceutical technologist. This is not so in Busia County as the personnel staffing does not meet these norms. For instance, sub-county facilities have 4 pharmacy personnel each instead of 14 personnel as per the Human Resource Staffing Norms. County should

consider employing more pharmacy staff so as to minimize or eliminate task shifting by other cadres especially the nursing one, which would in turn lead to patients receiving quality care as personnel would concentrate on what they were actually trained and equipped to do. When calculated from the norms, Busia County needs 225 pharmacy personnel to manage pharmaceutical services from level 2 to level 5 health facilities, which when compared to the 53 staff on head count, both old and newly employed by partners and the county government, the number is totally inadequate.

Staff training on supply chain management in Busia County was reported to be inadequate as the training is cadre-specific, so not all health personnel who manage the supply chain in the various county health facilities are trained on all aspects of supply chain management. From this study, only 44% of pharmacists, 16% of pharmaceutical technologists and only 8% of nurses reported that they were satisfied with how the supply chain management trainings were being conducted in the county. The county should look into training of staff on supply chain management for pharmaceutical commodities and improve the training content so that all personnel involved in supply chain management can understand all aspects of it and improve its performance.

Most of the health facilities reported not having vital reference materials needed to perform departmental duties optimally which could compromise quality patient care. Also most of the respondents reported that they lacked vital tools, reference materials, lacked basic amenities and infrastructure that were needed for them to perform optimally. The long lead times that the health facilities experience as reported by 24% of the respondents to be more than a three months more often interfered with service delivery of health personnel to the population. The county should address the long lead times that county health facilities experience so that health personnel can perform their duties to the population optimally.

### 6.3 Conclusions

Availability of an efficient Logistics Management Information System, efficient use of county funds for procurement of medicines, adequate staffing levels and adequate training of health personnel who manage the supply chain are key to Busia County achieving an efficient and effective pharmaceutical commodity supply chain.

## 6.4 Recommendations

### 6.3.1 The Logistics Management Information System (LMIS)

For organization and effectiveness, supply chain interventions need the active participation of stakeholders, an efficient LMIS, good inventory management practices and political goodwill from the government. Increasing funding for health care will allow for more research and development of a more comprehensible LMIS which will in turn enable sustainability of supply chain management system. An efficient LMIS is a necessity for the county to adopt in order to achieve an effective supply chain management system which would help minimize waste and inefficiencies in the system and by so doing, better health care standards in Busia County.

In order to achieve efficiency in her hospitals, Busia County should embrace technology and upgrade their current drug inventory system. Staff should also be trained on good inventory management practices so as to improve their skills, and also on the LMIS so as to enable good inventory practices being employed in the facilities, since it is through proper inventory management that savings in total inventory cost can be made.

### 6.3.2 Effective use of county funds for procurement of medicines

On Annual Drug Expenditure, use of ABC analysis alone, which is based on monetary value and use, is not a good measure for inventory management as some items that have low monetary value are vital and their importance can be disregarded simply because they are not category A items (Wandalkar et al., 2013). Criticality of drugs is also important and should be put into consideration (Mohamed & Ahmed, 2016). Efficient and effective inventory management is achieved when ABC is used in combination with VEN analysis (Anand *et al*., 2013), as it is more cost-effective and minimalizes stock out incidences of vital medicines.

### 6.3.3 Personnel staffing levels and training on supply chain management

Addressing human resource for health shortage currently being experienced in the county will go a long way to improve supply chain management processes and inventory management practices and will also enhance smooth flow of information within the supply chain, leading to improved access to essential medicines by the population and good health outcomes.

Addressing human resource for health shortage will also improve the flow of logistics information, enable good inventory management and efficiency of the supply chain management as a whole. It will, in turn, lead to good health outcomes brought about by improved access to medicines. In an effort to reduce staff shortage, the county government should employ the unemployed health

workers according to the Human Resource for Health staffing norms with an emphasis on the right skill mix so as to be able to minimize or eliminate task shifting of health personnel.

The county should embrace a more efficient supply chain that is being managed by better-trained personnel in order to improve access to health care in poor resource settings. This can be achieved through more trainings that incorporates all cadres and by employing more pharmacy personnel so that supply chain system is effectively managed in the county.

Training needs gaps on supply chain management should be addressed to enable efficient management of commodities in health facilities. This can be made possible through increasing funding for health care as that would enable the much-needed capacity building and supply chain training for staff in the county. Training content should also be looked into as most staff are currently not satisfied with how the trainings are done or with the training content itself

### 6.4 Limitations of the study

The accuracy of the study was dependent on the quality of the data used. The different public hospitals use both the manual and electronic systems of documentation putting into question the accuracy of some of the data gathered using the manual system. There were also a few comparable studies to compare with especially on the Logistic Management Information System (LMIS) and Human Resource for Health for Pharmaceutical Supply Chain Management.

To identify matters affecting the supply chain management and service delivery at county level, interviews were conducted with 5 officers. Since only two senior county officers were willing to participate in this research, interviews were conducted with three other officers who fill in for county officers from time to time to fill that gap.

A few sub counties did not have a faith-based organization dispensary or personnel in the facility had not worked in that particular facility for more than a year. In that situation, the study site was moved to a low volume faith-based organization health centre or a nursing home in the same sub county.

### 6.5 Recommendations for further research

The study was done in one county in few selected facilities. Further studies should include more study sites. Variables such as commodity pricing used by different pre-qualified county suppliers

need to be studied in order to give us more understanding of pharmaceutical commodities supply chain challenges in county health facilities.

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**Annexes**

Annex 1: Questionnaire on Logistics Management Information Systems (LMIS)

The questionnaire will be issued to Pharmacy Personnel and Nurses who help manage the Pharmaceutical Supply Chain**.** The questionnaire will be used to address RQ1: "Is the existing Logistics Management Information System sufficiently robust to serve the needs of Busia County?"

**Background**: The hospitals, health centres and dispensaries in Busia County can be considered as microcosm of the larger health system in the county, sharing many of the same problems and concerns. The flow, quality and quantity of information available in these facilities are vital aspects of a drug management information system, the LMIS, in the county, and they can only be as strong as its weakest components. The following tool will be used to evaluate performance of the LMIS in this facility.

| No. | Questions | Response | Comments |
|---|---|---|---|
| 01 | Cadre of the interviewee | | |
| 02 | Number of years you have worked in this station | Years: | |
| 03 | Who is the officer responsible for supply chain management in this facility? | (i) Hospital/Sub County Pharmacist<br>(ii) Pharmaceutical Technologist<br>(iii) Nursing officer in-charge<br>(iv) Others (specify) | |

**1. Good Inventory Management Practices**

| No. | Questions | Response | | Comments |
|---|---|---|---|---|
| | | Yes | No | |
| 01 | Do you regularly use the following documents to manage the supply chain? | | | |

| | | | | |
|---|---|---|---|---|
| | (i) Counter issue and requisition forms<br>(ii) Stock control cards<br>(iii) Daily activities register<br>(iv) Antibiotic register<br>(v) Insulin register<br>(vi) Register for controlled substances | | | |
| 02 | What LMIS forms do you use for ordering and reporting on commodity management?<br>(i) Country-specific<br>(ii) Others (specify) | | | |
| 03 | Are the LMIS forms always available for facility use during reporting or ordering process? If not, state how long your facility has operated without LMIS tools | | | |
| 04 | Does the tool cover all the key areas as it is supposed to? | | | |
| 05 | How often do you send the following document to the County and National levels for appropriate action?<br>(a) Commodity orders:<br>(i) Monthly<br>(ii)Quarterly<br><br>(b) Commodity reports:<br>(i) Monthly<br>(ii) Quarterly | | | |
| 06 | Are your reports and orders submitted to the relevant departments on time? (counter check the reporting tools or order forms) | | | |
| 07 | Is the data you submit normally accurate and complete?(check the reporting tools or order forms) | | | |
| 08 | Have you had to place an emergency order recently? If so, how many? | | | |
| 09 | What transportation means is used to ferry commodities?<br>(a) From the supplier directly to the facility: | | | |

| | | | | |
|---|---|---|---|---|
| | (i) Contracted companies<br>(ii) Facility utility vehicle<br>(iii) Private vehicle<br>(iv) Motor boats<br>(v) Animal-driven carts<br>(vi) Motorcycle<br>(vii) On foot using porters<br><br>(b) From the County or Sub County store to this facility:<br>(i) Contracted companies<br>(ii) Facility utility vehicle<br>(iii) Facility ambulance<br>(iv) Private vehicle<br>(v) Motor boats<br>(vi) Animal-driven carts<br>(vii) Motorcycle<br>(viii) On foot using porters<br>(ix) Others (specify) | | | |
| 09 | What is your lead-time?<br>(i) Two weeks<br>(ii) A month<br>(iii) Two months<br>(iv) A quarter<br>(v) More than a quarter | | | |
| 10 | Have you had any supervisory visit by the county or relevant departments on inventory management recently? If so, specify.( check with the visitors book) | | | |

**2. Facility Infrastructure**

| No. | Question | Response | | Comments |
|---|---|---|---|---|
| | | Yes | No | |
| 01. | Is the facility connected to any form of electricity? | | | |
| 02. | Does the facility embrace electronic management tools for commodity management? | | | |
| 03. | If yes on question 2 above, is the facility using current commodity management software? | | | |

| | | | | |
|---|---|---|---|---|
| 04. | Is the facility well connected to the internet? | | | |

**3. Staff Training and LMIS use in facilities.**

| No. | Questions | Response | Comments |
|---|---|---|---|
| 01. | How many staff in this facility handle the supply chain?<br>(i) Pharmacists<br>(ii) Pharmaceutical technologists<br>(iii) Nurses | | |
| 02. | How many of the staff above are trained on LMIS use?<br>(i) Pharmacists<br>(ii) Pharmaceutical Technologists<br>(iii) Nurses | | |
| 03. | Does the LMIS data collected from facilities aid you in decision-making? Is so, how?(Level 4 and 5 facilities) | | |
| 04. | Comment on your preference of the electronic LMIS use as compared to manual system or vice versa. | | |
| 05. | Is the software appropriate to you and to your work? | | |
| 06. | Does the current LMIS make the necessary adjustments and commodity requests when need arises? | | |
| 07. | Is the reporting timely? | | |
| 08. | Are you able to teach other staffs on LMIS use? | | |
| 09. | Do you and your staff need additional training on LMIS use? | | |
| 17. | In your opinion is the LMIS system versatile? | | |

**Annex 2: Questionnaire for County informants on budgetary allocation.**

The questionnaire will be used to address RQ2: "Is the current level of budgetary allocation sufficient and are funds efficiently used?"

The objective for this survey is: (a) to ensure that Busia as a county gets sufficient drug quantities from her budgetary allocation and (b) to enable access to medicines by patients as effectively as possible.

01. Which decisions do you make that are vital in achieving these objectives?

02. In your opinion who should be tasked with the responsibility of decision-making and coordination of activities towards achieving the above objectives

03. Which categories of information do you need to make such important decisions?

04. What is the source of the information that aide you in decision-making?

05. What else can you be in a position to offer in order to help enable more access to medicines by patients in this county?

06. Are you aware of the policy requirements concerning budgetary allocation tor health?

07. What are your views on the policy requirements concerning budgetary allocations for health?

08. Are the policies adequate to address the needs of Busia county health department concerning budgetary allocation for health? If not, what are the constraints?

09. Which policies on budgetary allocation in your opinion should be changed? What improvements would you make?

10. Any additional comments

## Annex 3: Questionnaire on Human Resource for Health for Pharmaceutical Supply Chain Management

The questionnaire will be used to address RQ3: "Are the current staff adequately trained, is the number sufficient and is the work organization conducive for them to deliver optimally?"

**1. Staffing Norms and Qualifications**

| | | Pharmacists | Pharmaceutical Technologists | Nurses |
|---|---|---|---|---|
| 01. | (a) Current Staff Numbers | 17 with 2 in school (full-time) | 26 | 476 |
| | (b) Ideal Staff Numbers | | | |
| 02. | (a) Staff qualifications | Msc Pharmacy:<br>Clinical pharmacy - 1<br>Clinical Pharmacology - 1<br>Pharmaco-epidemiology and epivigilance - 1 | Diploma in Pharmacy | Bs in Nursing<br>Diploma in Nursing<br>Certificate in Nursing |

| | | | | |
|---|---|---|---|---|
| | | Bsc Pharmacy - 15 | | |
| | (b) Ideal staff qualifications | Bsc Pharmacy | Diploma in Pharmacy | Diploma in Nursing |

**2. Staff Training on Supply Chain Management**

| No. | Questions | Response | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|
| | | Pharmacists | | Pharmaceutical Technologists | | Nurses | | |
| 01. | Which officer is solely responsible for supply chain management in this facility? | | | | | | | |
| 02. | How many staff in the facility are trained on:<br>(i) Inventory management practices<br>(ii) Rational drug use<br>(iii) Quantification<br>(iv) Forecasting<br>(v) Supply chain planning and mapping | | | | | | | |
| 03. | How many of the staff are able to report on sub-standard commodities as well as patient side effects from medicines after their administration? | | | | | | | |
| 04. | Are these reporting forms available at the facility?<br>(i) Yellow form<br>(ii) Pink form<br>(iii) Alert card | Yes | No | Yes | No | Yes | No | |
| | | | | | | | | |
| 05. | Are SCM trainings conducted in the county done to your satisfaction? | | | | | | | |
| 06. | What in your opinion needs to change in SCM training aspect? | | | | | | | |

**3. Work Environment**

| No. | Question | Response | Comment |
|---|---|---|---|

| | | Yes | No | |
|---|---|---|---|---|
| 01. | Dispensing and storage areas:<br>(i) Is it clean and orderly?<br>(ii) Is it well ventilated?<br>(iii) Is the lighting in the store sufficient?<br>(iv) Is storage space adequate?<br>(v) Are pharmaceuticals stored on shelves and floor pallets as required?<br>(vi) Is commodity security of pharmaceuticals guaranteed in the store and pharmacy?<br>(vii) Are expired items stored separately from other pharmaceutical commodities?<br>(viii) Is the temperature monitored in the store?<br>(ix) Are inventory records in the dispensing area and store regularly updated? | | | |
| 02. | Cold chain management:<br>(i) Does your fridge have a thermometer for monitoring its temperature?<br>(ii) Do you fill in temperature charts twice a day like you are supposed to?<br>(iii) Is there sufficient room in the refrigerator to accommodate all medicines that require cold chain storage? If not, comment on how you store your commodities?<br>(iv) What other power source do you use in case of electricity failure? | | | |
| 03. | Infrastructure:<br>(i) Do you have working computers in the department?<br>(ii) Is the work space adequate to enable you perform your duties optimally?<br>(iii) Do you have the basic amenities like water, electricity and internet access in the department? | | | |
| | (d) Resources : | | | |

| | | | | |
|---|---|---|---|---|
| | Do you have all the reference materials you need to perform your departmental duties optimally?<br>(i) Drug Formulary<br>(ii) Essential Medicines List<br>(iii) Standard Treatment Guidelines<br>(iv) Pharmacovigilance tools<br>(v) Pediatric treatment protocols | | | |
| | (e) Do you have Standard Operating Procedures for:<br>(i) Good storage practices<br>(ii) Good dispensing practices<br>(iii) Good inventory management practices<br>(iv) Good dispensing practices | | | |

**4. Inventory Management**

| No. | Questions | Response | Comments |
|---|---|---|---|
| 01. | Which activity of the SCM are you involved in:<br>(i) Selection<br>(ii) Quantification<br>(iii) Procurement<br>(iv) Distribution | | |
| 02. | Comment on the decisions you normally make for the activity you are responsible for? | | |
| 03. | What in your opinion needs to change on how SCM is handled? | | |
| 04. | State your reasons for the stock outs | (i)<br>(ii)<br>(iii)<br>(iv)<br>(v) | |
| 05. | What in your opinion can be done to manage stock out situation in this facility? | (i)<br>(ii)<br>(iii)<br>(iv)<br>(v) | |

| | | | |
|---|---|---|---|
| 06. | Comment on who, what and how commodity resupply quantities are determined in this facility | | |
| 07. | What is your lead time (period between ordering and receipt of commodities):<br>(i) One month<br>(ii) A quarter<br>(iii) More than a quarter | | |

Annex 4: ABC Analysis Worksheet

**ABC Analysis – Answer Sheet**

| No. | Product Description | Basic Unit Price | Unit Cost Price (KES) | Total Units | Value (KES) | % Total Value | Cumulated % of value |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
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| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |

Annex 5: Consent Form

**PARTICIPANT INFORMATION AND CONSENT FROM**

**STUDY TITLE: EVALUATING PHARMACEUTICAL SUPPLY CHAIN MANAGEMENT CHALLENGES IN BUSIA COUNTY**

**SECTION 1: INFORMATION SHEET–HEALTH PERSONNEL**

**Investigator:** Dr. Sharon Apinde

**Institutional affiliation:** Strathmore Business School (SBS)

**SECTION 2: INFORMATION SHEET–THE STUDY**

**2.1: Why is this study being carried out?**

The study is being carried out to assess if the Logistics Management Information System we use in this county is robust enough to manage our health needs and to assess if our budgetary allocation for health is sufficient and funds efficiently used. The study also aims to address our county staffing norms, assess if our work environment as heath care workers enables us to perform our duties that are related to supply chain management optimally and our competencies when managing the pharmaceutical supply chain.

**2.2: Do I have to take part?**

No. Taking part in this study is entirely optional and the decision rests only with you. If you decide to take part, you will be asked to complete a questionnaire to get information on Supply Chain Management (SMC). If you are not able to answer all the questions successfully the first time, you may be asked to sit through another informational session after which you may be asked to answer the questions a second

time. You are free to decline to take part in the study from this study at any time without giving any reasons.

**2.3: Who is eligible to take part in this study?**

- Pharmacy personnel and nurses who manage the pharmaceutical supply chain in different facility levels in the county.
- Staff at county level involved in decision making concerning the SCM

**2.4: Who is not eligible to take part in this study?**

- Staff who have not worked in their facility for more than a year
- People not involved in procurement, budgetary allocation and decision making Staff at county level who have not held their position for more than a year

**2.5: What will taking part in this study involve for me?**

You will be approached me and requested to take part in the study. If you are satisfied that you fully understand the goals behind this study, you will be asked to sign the informed consent form (this form) and then taken through a questionnaire to complete.

**2.6: Are there any risks or dangers in taking part in this study?**

There are no risks in taking part in this study. All the information you provide will be treated as confidential and will not be used in any way without your express permission.

**2.7: Are there any benefits of taking part in this study?**

The information will be used to improve access to medicines by patients in the county and by so doing, improve hospital pharmaceutical supply chain performance.

**2.8: What will happen to me if I refuse to take part in this study?**

Participation in this study is entirely voluntary. Even if you decide to take part at first but later change your mind, you are free to withdraw at any time without explanation.

**2.9: Who will have access to my information during this research?**

All research records will be stored in securely locked cabinets. That information may be transcribed into our database but this will be sufficiently encrypted and password protected. Only the people who are closely concerned with this study will have access to your information. All your information will be kept confidential.

**2.10: Who can I contact in case I have further questions?**

You can contact me, Sharon Apinde, at SBS, or by e-mail (sapinde21@gmail.com), or by phone (0712027598). You can also contact my supervisor, Prof. Gilbert Kokwaro, at the Strathmore Business School, Nairobi, or by e-mail (gkokwaro@strathmore.edu) or by phone (0722323651)

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

**Participation in the research study**

☐ I AGREE to take part in this research

☐ I DO NOT AGREE to take part in this research

**Storage of information on the completed questionnaire**

☐ I AGREE to have my completed questionnaire stored for future data analysis

☐ I DO NOT AGREE to have my completed questionnaire stored for future data analysis

**Participant's Signature:**

_____

**Date: _____/_____/_____**

***DD / MM / YEAR***

**Participant's Name:**

_____

**Time: _____ /_____**

***(Please print name)*** ***HR / MN***

I, _____ (Name of person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that she has understood the nature and the purpose of the study and consents to the participation in the study. She has been given opportunity to ask questions which have been answered satisfactorily.

**Investigator's Signature:**

_____

**Date: _____/_____/_____**

***DD / MM / YEAR***

**Investigator's Name:**

_____

**Time: _____ /_____**

***(Please print name)*** ***HR / MN***

**Appendix 1: Analysis of Busia County Referral Hospital 2015-2016**

| Item Name | UOM | Value | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | AMPOULE | 1,000,000.00 | 19.06% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | TIN OF 1000S | 375,000.00 | 26.20% | A | V | AV | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 500ML | 288,000.00 | 31.69% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | VIAL | 252,000.00 | 36.49% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | VIAL | 245,000.00 | 41.16% | A | V | AV | I |
| PHENOBARBITONE INJECTION - 200MG/ML | AMPOULE | 207,500.00 | 45.11% | A | V | AV | I |
| AMOXYCILLIN CAPSULES - 250MG | TIN OF 1000S | 189,000.00 | 48.72% | A | V | AV | I |
| CIPROFLOXACIN TABLETS - 250MG | TIN OF 1000S | 181,500.00 | 52.17% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES 500MG | TIN OF 500S | 165,000.00 | 55.32% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| INSULIN BIPHASIC 30/70 - 100IU/ML | VIAL | 150,000.00 | 58.18% | A | N | AN | I |
| CEFIXIME TABLET 400MG | PACK OF 10 | 125,000.00 | 60.56% | A | V | AV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | AMPOULE | 125,000.00 | 62.94% | A | V | AV | I |
| AZITHROMYCIN 500MG | PACK OF 3S | 120,000.00 | 65.23% | A | V | AV | I |
| ORAL REHYDRATION SALTS | Co-Pack | 105,000.00 | 67.23% | A | V | AV | I |
| HYDRALAZINE INJECTION - 20MG/ML | AMPOULE | 95,250.00 | 69.04% | A | V | AV | I |
| FOLIC ACID TABLETS - 5MG | TIN OF 100S | 84,000.00 | 70.64% | A | E | AE | I |
| METRONIDAZOLE TABLETS - 200MG | TIN OF 1000S | 80,000.00 | 72.17% | A | V | AV | I |
| VITAMIN B COMPLEX (B1, B6 AND B12) | PACK OF 20S | 75,600.00 | 73.61% | A | N | AN | I |
| FLUPHENAZINE INJECTION - 25MG/ML | AMPOULE | 68,800.00 | 74.92% | A | V | AV | I |
| CEFUROXIME 500MG TABLETS | PACK OF 10 | 64,985.00 | 76.16% | B | N | BN | II |
| CARBAMAZEPINE TABLETS 200MG | TIN OF 1000S | 60,000.00 | 77.30% | B | V | BV | I |
| IBUPROFEN TABLETS - 200MG | TIN OF 1000S | 60,000.00 | 78.45% | B | V | BV | I |
| PENICILLIN BENZYL INJECTION - 5MU | VIAL | 56,000.00 | 79.51% | B | N | BN | II |
| ANTI-D (RH) INJECTION - 250MCG | VIAL | 50,000.00 | 80.47% | B | N | BN | II |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 100 ML | 50,000.00 | 81.42% | B | N | BN | II |
| MORPHINE POWDER | PKTS X 100GMS | 50,000.00 | 82.37% | B | N | BN | II |
| HALOTHANE INHALATION | 250ML BOTTLE | 48,840.00 | 83.30% | B | V | BV | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 100 ML | 45,000.00 | 84.16% | B | V | BV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | PACK OF 1000S | 41,400.00 | 84.95% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 50ML BOTTLE | 40,800.00 | 85.73% | B | V | BV | I |
| KETAMINE INJECTION - 50MG/ML | VIAL | 40,000.00 | 86.49% | B | V | BV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NIFEDIPINE TABLETS - 20MG | TIN OF 1000S | 36,000.00 | 87.17% | B | N | BN | II |
| GLIBENCLAMIDE TABLETS - 5MG | TIN OF 1000S | 35,000.00 | 87.84% | B | N | BN | II |
| THIOPENTONE SODIUM INJECTION - 500MG | VIAL | 33,000.00 | 88.47% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | VIAL | 32,000.00 | 89.08% | B | V | BV | I |
| HYDROCORTISONE INJECTION - 100MG | VIAL | 29,000.00 | 89.63% | B | V | BV | I |
| MULTIVITAMIN SYRUP | 5L | 28,200.00 | 90.17% | B | N | BN | II |
| HALOPERIDOL TABLETS - 5MG | TIN OF 1000S | 25,100.00 | 90.65% | B | V | BV | I |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 10 ML VIAL | 25,000.00 | 91.12% | C | V | CV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | TIN OF 1000S | 24,000.00 | 91.58% | C | N | CN | III |
| GENTAMICIN INJECTION - 80MG-40MG/ML 2ML AMP | AMPOULE | 22,500.00 | 92.01% | C | N | CN | III |
| IBUPROFEN SYRUP 100MG/5ML 60ML | BOTTLE | 22,000.00 | 92.43% | C | V | CV | I |
| HYDROCORTISONE OINTMENT - 1% | TUBE 15GM | 21,600.00 | 92.84% | C | E | CE | II |
| PHENOBARBITONE TABLETS - 30MG | TIN OF 100S | 21,000.00 | 93.24% | C | V | CV | I |
| ALBENDAZOLE TABLETS 400MG | TIN OF 500S | 20,000.00 | 93.62% | C | V | CV | I |
| NEOSTIGMINE INJECTION - 2.5MG/ML | VIAL | 20,000.00 | 94.00% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | AMPOULE | 20,000.00 | 94.38% | C | E | CE | II |
| GRISEOFULVIN TAB 125MG | TIN OF 1000S | 19,500.00 | 94.76% | C | E | CE | II |
| DICLOFENAC GEL, 1% W/W, 20G | TUBE | 18,000.00 | 95.10% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | TUBE 20GM | 17,000.00 | 95.42% | C | E | CE | II |
| PANCURONIUM INJECTION - 4MG/2ML | AMPOULE | 16,000.00 | 95.73% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | AMPOULE | 15,000.00 | 96.01% | C | N | CN | III |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 200 doses cartridge | 15,000.00 | 96.30% | C | N | CN | III |
| POVIDONE-IODINE SOLUTION - 10% | 1L | 14,500.00 | 96.58% | C | N | CN | III |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | TIN OF 1000S | 14,400.00 | 96.85% | C | N | CN | III |
| CETIRIZINE 10MG TABLETS | PACK OF 100S | 13,500.00 | 97.11% | C | N | CN | III |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | AMPOULE | 13,000.00 | 97.36% | C | V | CV | I |
| BENZHEXOL TABLETS - 5MG | PACK OF 1000S | 12,200.00 | 97.59% | C | V | CV | I |
| AMLODIPINE TABLET 5MG | PACK OF 100S | 12,000.00 | 97.82% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 5L | 10,800.00 | 98.02% | C | N | CN | III |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | AMPOULE | 10,000.00 | 98.21% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | AMPOULE | 10,000.00 | 98.40% | C | V | CV | III |
| SILVER SULPHADIAZINE CREAM - 1% | 250GM JAR | 10,000.00 | 98.59% | C | N | CN | III |
| CHLORPROMAZINE TABLETS - 100MG | TIN OF 1000S | 9,850.00 | 98.78% | C | V | CV | I |
| CIPROFLOXACIN EYE DROPS 0.3% | 5 ML BTL | 9,000.00 | 98.95% | C | N | CN | III |
| CHLORAMPHENICAL INJECTION - 1GM | VIAL | 7,600.00 | 99.10% | C | V | CV | I |
| FERROUS SULPHATE TABLETS - 200MG | TIN OF 1000S | 6,875.00 | 99.23% | C | V | CV | I |
| ADRENALINE INJECTION - 1MG/ML | AMPOULE | 5,000.00 | 99.32% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | AMPOULE | 4,800.00 | 99.42% | C | V | CV | I |
| FLUOXETINE CAPSULES - 20MG | PACK OF 100S | 4,000.00 | 99.49% | C | E | CE | II |
| KETOCONAZOLE TABLETS - 200MG | PACK OF 30S | 4,000.00 | 99.57% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | AMPOULE | 3,600.00 | 99.64% | C | V | CV | I |
| METHYLDOPA TABLETS - 250MG | TIN OF 1000S | 3,550.00 | 99.70% | C | V | CV | I |
| BENZYLBENZOATE EMULSION - 25% APPLICATION | 50ML BOTTLE | 3,000.00 | 99.76% | C | E | CE | II |
| ENALAPRIL TABLETS - 5MG | PACK OF 100S | 2,600.00 | 99.81% | C | V | CV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DOMPERIDONE 10MG TABLETS | PACK OF 100S | 1,900.00 | 99.85% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | AMPOULE | 1,800.00 | 99.88% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | TIN OF 1000S | 1,750.00 | 99.92% | C | N | CN | III |
| HEPARINE INJECTION - 5000UNITS/ML 5ML | VIAL | 1,360.00 | 99.94% | C | V | CV | I |
| BISACODYL 5MG TABLETS | PACK OF 100S | 1,000.00 | 99.96% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 5 ML BTL | 850 | 99.98% | C | V | CV | I |
| CHLORPHENIRAMINE TABLETS - 4MG | TIN OF 1000S | 620 | 99.99% | C | N | CN | III |
| ACETYLSALICYLIC ACID TABLETS - 300MG | TIN OF 1000S | 500 | 100.00% | C | N | CN | III |
| ATROPINE INJECTION - 1MG/ML | AMPOULE | 100 | 100.00% | C | E | CE | II |
| CALAMINE LOTION - 15% | 50ML BOTTLE | 25 | 100.00% | C | E | CE | II |
| WATER FOR INJECTION | 10ML VIAL | 4 | 100.00% | C | N | CN | III |
| | | 5247759 | | | | | |

## Appendix 2: Analysis of Busia County Referral Hospital 2016-2017

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 1,250,000.00 | 7.75% | 7.75% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 875,000.00 | 5.43% | 13.18% | A | N | AN | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 648,000.00 | 4.02% | 17.20% | A | V | AV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 616,000.00 | 3.82% | 21.02% | A | V | AV | I |
| DEXTROSE - 5% | 480,000.00 | 2.98% | 24.00% | A | V | AV | I |
| ANTI-D (RH) INJECTION - 250MCG | 450,000.00 | 2.79% | 26.79% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 448,000.00 | 2.78% | 29.56% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FLUCLOXACILLIN CAPSULES - 250MG | 437,500.00 | 2.71% | 32.28% | A | N | AN | I |
| METRONIDAZOLE INJECTION - 5MG/ML | 437,500.00 | 2.71% | 34.99% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | 385,000.00 | 2.39% | 37.38% | A | N | AN | I |
| SODIUM HYPOCHLORITE SOLUTION | 372,300.00 | 2.31% | 39.69% | A | N | AN | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 369,000.00 | 2.29% | 41.98% | A | V | AV | I |
| ORAL REHYDRATION SALTS | 367,500.00 | 2.28% | 44.26% | A | V | AN | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 360,000.00 | 2.23% | 46.49% | A | N | AN | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 360,000.00 | 2.23% | 48.72% | A | N | AN | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 344,850.00 | 2.14% | 50.86% | A | V | AV | I |
| ERYTHROMYCIN TABLETS - 250MG | 275,000.00 | 1.71% | 52.57% | A | N | AN | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 270,000.00 | 1.67% | 54.24% | A | N | AN | I |
| SODIUM LACTATE SOLUTION | 268,800.00 | 1.67% | 55.91% | A | N | AN | I |
| Co-trimoxazole suspension, 240 mg/5ml | 251,600.00 | 1.56% | 57.47% | A | N | AN | I |
| POVIDONE-IODINE SOLUTION - 10% | 243,600.00 | 1.51% | 58.98% | A | N | AN | I |
| CEFIXIME TABLET 400MG | 225,000.00 | 1.40% | 60.37% | A | V | AV | I |
| OMEPRAZOLE CAPSULES - 20MG | 225,000.00 | 1.40% | 61.77% | A | V | AV | I |
| FLUPENTHIXOL DECANOATE - 20MG/ML | 202,500.00 | 1.26% | 63.03% | A | N | AN | I |
| DICLOFENAC INJECTION - 75MG | 200,000.00 | 1.24% | 64.27% | A | N | AN | I |
| ALCOHOL BASED HAND RUB | 180,000.00 | 1.12% | 65.38% | A | V | AV | I |
| MORPHINE POWDER | 175,000.00 | 1.09% | 66.47% | A | V | AV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 175,000.00 | 1.09% | 67.55% | A | N | AN | I |
| ETHANOL (DENATURED) - 94% | 170,000.00 | 1.05% | 68.61% | A | V | AV | I |
| OXYTOCIN INJECTION - 5 IU/ML | 168,000.00 | 1.04% | 69.65% | B | V | BV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CIPROFLOXACIN TABLETS - 250MG | 165,000.00 | 1.02% | 70.67% | B | N | BN | II |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG(MARCAINE HEAVY) | 150,000.00 | 0.93% | 71.60% | B | N | BN | II |
| IBUPROFEN TABLETS - 200MG | 150,000.00 | 0.93% | 72.53% | B | N | BN | II |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 138,000.00 | 0.86% | 73.39% | B | N | BN | II |
| CARBAMAZEPINE TABLETS 200MG | 135,000.00 | 0.84% | 74.23% | B | N | BN | II |
| METFORMINE TABLETS - 500MG | 134,640.00 | 0.84% | 75.06% | B | N | BN | II |
| PARACETAMOL SUSPENSION - 120MG/5ML | 126,000.00 | 0.78% | 75.84% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | 124,800.00 | 0.77% | 76.62% | B | N | BN | II |
| PHENOBARBITONE INJECTION - 200MG/ML | 124,500.00 | 0.77% | 77.39% | B | N | BN | II |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 120,000.00 | 0.74% | 78.13% | B | N | BN | II |
| ETHANOL (DENATURED) - 70% | 120,000.00 | 0.74% | 78.88% | B | V | BV | I |
| PARACETAMOL TABLETS - 500MG | 118,125.00 | 0.73% | 79.61% | B | N | BN | II |
| ATRACURIUM INJECTION - 10MG/ML | 117,500.00 | 0.73% | 80.34% | B | V | BV | I |
| CEFUROXIME 250MG TABS | 117,000.00 | 0.73% | 81.06% | B | N | BN | II |
| HYDROCORTISONE INJECTION - 100MG | 116,000.00 | 0.72% | 81.78% | B | N | BN | II |
| ENALAPRIL TABLETS - 5MG | 111,800.00 | 0.69% | 82.48% | B | N | BN | II |
| FLUCLOXACILLIN CAPSULES 500MG | 110,000.00 | 0.68% | 83.16% | B | V | BV | I |
| SILVER SULPHADIAZINE CREAM - 1% | 100,000.00 | 0.62% | 83.78% | B | N | BN | II |
| HYDRALAZINE INJECTION - 20MG/ML | 95,250.00 | 0.59% | 84.37% | B | N | BN | II |
| WATER FOR INJECTION | 92,000.00 | 0.57% | 84.94% | B | V | BV | I |
| GABAPENTIN CAP 300MG | 90,000.00 | 0.56% | 85.50% | B | N | BN | II |
| OXYTOCIN INJECTION - 10 IU/ML | 90,000.00 | 0.56% | 86.06% | B | N | BN | II |
| AZITHROMYCIN 500MG | 88,000.00 | 0.55% | 86.60% | B | N | BN | II |
| DEXTROSE - 10% | 79,560.00 | 0.49% | 87.10% | B | V | BV | I |
| CEFTAZIDIME 1G INJ. | 70,000.00 | 0.43% | 87.53% | B | V | BV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 60,000.00 | 0.37% | 87.90% | B | N | BN | II |
| PENICILLIN BENZYL INJECTION - 5MU | 56,000.00 | 0.35% | 88.25% | B | N | BN | II |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 54,000.00 | 0.33% | 88.58% | B | N | BN | II |
| NIFEDIPINE TABLETS - 20MG | 54,000.00 | 0.33% | 88.92% | B | N | BN | II |
| DOXYCYCLINE CAPSULES - 100MG | 51,600.00 | 0.32% | 89.24% | B | N | BN | II |
| VALACYCLOVIR TAB. 500MG | 49,400.00 | 0.31% | 89.55% | B | N | BN | II |
| Acyclovir 400mg Tabs | 49,000.00 | 0.30% | 89.85% | B | N | BN | II |
| PENICILLIN BENZYL INJECTION - 1MU | 49,000.00 | 0.30% | 90.15% | C | N | CN | III |
| HALOTHANE INHALATION | 48,840.00 | 0.30% | 90.46% | C | V | CV | I |
| REHYDRATION SALTS ORAL (ORS) | 46,500.00 | 0.29% | 90.74% | C | N | CN | III |
| FLUPHENAZINE INJECTION - 25MG/ML | 43,000.00 | 0.27% | 91.01% | C | N | CN | III |
| GLIBENCLAMIDE TABLETS - 5MG | 42,000.00 | 0.26% | 91.27% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 40,120.00 | 0.25% | 91.52% | C | N | CN | III |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 40,000.00 | 0.25% | 91.77% | C | N | CN | III |
| PANCURONIUM INJECTION - 4MG/2ML | 40,000.00 | 0.25% | 92.02% | C | N | CN | III |
| RANITIDINE INJECTION - 50MG/2ML | 40,000.00 | 0.25% | 92.26% | C | N | CN | III |
| CHLORPROMAZINE TABLETS - 100MG | 39,400.00 | 0.24% | 92.51% | C | E | CE | II |
| Cotrimoxazole 480mg Tabs | 38,600.00 | 0.24% | 92.75% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 38,500.00 | 0.24% | 92.99% | C | N | CN | III |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 37,800.00 | 0.23% | 93.22% | C | N | CN | III |
| FUROSEMIDE INJECTION - 20MG/2ML | 35,000.00 | 0.22% | 93.44% | C | N | CN | III |
| WATER BASED LUBRICANT (KY JELLY) | 33,000.00 | 0.20% | 93.64% | C | N | CN | III |
| TINIDAZOLE TAB 500MG | 32,500.00 | 0.20% | 93.85% | C | N | CN | III |
| PREDNISOLONE TABLETS - 5MG | 32,400.00 | 0.20% | 94.05% | C | N | CN | III |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 32,000.00 | 0.20% | 94.24% | C | N | CN | III |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BENZHEXOL TABLETS - 5MG | 30,500.00 | 0.19% | 94.43% | C | V | CV | III |
| KETAMINE INJECTION - 50MG/ML | 30,000.00 | 0.19% | 94.62% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 30,000.00 | 0.19% | 94.81% | C | N | CN | III |
| MAGNESIUM SULPHATE INJ 4%, W/V,100ML BOTTLE | 29,000.00 | 0.18% | 94.99% | C | V | CV | I |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 28,800.00 | 0.18% | 95.16% | C | V | CV | I |
| MULTIVITAMIN SYRUP | 28,200.00 | 0.17% | 95.34% | C | N | CN | III |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 28,000.00 | 0.17% | 95.51% | C | N | CN | III |
| DICLOFENAC SODIUM TABLETS - 50MG | 27,600.00 | 0.17% | 95.68% | C | N | CN | III |
| GLUTARALDEHYDE 2% SOLUTION | 27,300.00 | 0.17% | 95.85% | C | N | CN | III |
| INSULIN SOLUBLE - 100IU/ML | 27,300.00 | 0.17% | 96.02% | C | N | CN | III |
| ALBENDAZOLE TABLETS 400MG | 27,000.00 | 0.17% | 96.19% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 27,000.00 | 0.17% | 96.36% | C | E | CE | II |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 26,000.00 | 0.16% | 96.52% | C | E | CE | II |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 25,000.00 | 0.16% | 96.67% | C | V | CV | I |
| THIOPENTONE SODIUM INJECTION - 500MG | 24,750.00 | 0.15% | 96.83% | C | N | CN | III |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 24,000.00 | 0.15% | 96.98% | C | N | CN | III |
| HEPARINE INJECTION - 5000UNITS/ML 5ML | 23,800.00 | 0.15% | 97.12% | C | V | CV | III |
| VALPROIC ACID(SODIUM VALPROATE) 200MG TABLETS | 21,900.00 | 0.14% | 97.26% | C | N | CN | III |
| FERROUS SULPHATE TABLETS - 200MG | 20,625.00 | 0.13% | 97.39% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 20,000.00 | 0.12% | 97.51% | C | V | CV | I |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 20,000.00 | 0.12% | 97.64% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 18,825.00 | 0.12% | 97.75% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| GENTAMICIN INJECTION - 20MG-10MG/ML 2ML AMP | 18,000.00 | 0.11% | 97.86% | C | V | CV | I |
| GENTAMICIN INJECTION - 80MG-40MG/ML 2ML AMP | 18,000.00 | 0.11% | 97.98% | C | N | CN | III |
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 0.11% | 98.09% | C | N | CN | III |
| QUININE SULPHATE TABLETS - 300MG | 18,000.00 | 0.11% | 98.20% | C | E | CE | II |
| TETRACYCLINE EYE OINTMENT -1% | 18,000.00 | 0.11% | 98.31% | C | N | CN | III |
| AMITRIPTYLINE TABLETS - 25MG | 16,200.00 | 0.10% | 98.41% | C | V | CV | I |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 15,000.00 | 0.09% | 98.50% | C | V | CV | I |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG | 14,100.00 | 0.09% | 98.59% | C | V | CV | I |
| FUROSEMIDE TABLETS - 40MG | 14,000.00 | 0.09% | 98.68% | C | V | CV | I |
| DIGOXIN TABLETS - 0.25MG | 13,800.00 | 0.09% | 98.76% | C | V | CV | I |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 13,200.00 | 0.08% | 98.85% | C | V | CV | I |
| NYSTATIN SUSPENSION - 100 000IU/ML | 12,900.00 | 0.08% | 98.93% | C | V | CV | I |
| AMLODIPINE TABLET 5MG | 12,000.00 | 0.07% | 99.00% | C | V | CV | I |
| METRONIDAZOLE TABLETS - 200MG | 12,000.00 | 0.07% | 99.07% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 10,800.00 | 0.07% | 99.14% | C | V | CV | I |
| RETINOL (VITAMIN A)CAPSULES 50000IU | 10,800.00 | 0.07% | 99.21% | C | N | CN | III |
| METHYLDOPA TABLETS - 250MG | 10,650.00 | 0.07% | 99.27% | C | V | CV | I |
| GRISEOFULVIN TAB 125MG | 9,750.00 | 0.06% | 99.34% | C | N | CN | III |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 9,660.00 | 0.06% | 99.40% | C | V | CV | I |
| PARACETAMOL SUPPOSITORIES 125MG | 9,000.00 | 0.06% | 99.45% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 8,100.00 | 0.05% | 99.50% | C | V | CV | I |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 7,700.00 | 0.05% | 99.55% | C | V | CV | I |
| COMPOUND MAGNESIUM TRISILICATE TABLETS | 7,500.00 | 0.05% | 99.60% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| PARACETAMOL INJECTION 10MG/ML 100ML VIAL | 6,000.00 | 0.04% | 99.63% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | 5,250.00 | 0.03% | 99.67% | C | E | CE | II |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 5,000.00 | 0.03% | 99.70% | C | V | CV | I |
| PENICILLIN BENZATHINE INJECTION - 2.4 MU | 5,000.00 | 0.03% | 99.73% | C | N | CN | III |
| SALBUTAMOL TABLETS - 4MG | 5,000.00 | 0.03% | 99.76% | C | N | CN | III |
| FLUOXETINE CAPSULES - 20MG | 4,000.00 | 0.02% | 99.78% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 4,000.00 | 0.02% | 99.81% | C | N | CN | III |
| SALBUTAMOL SYRUP - 2MG/5ML | 4,000.00 | 0.02% | 99.83% | C | N | CN | III |
| CALAMINE LOTION - 15% | 3,750.00 | 0.02% | 99.86% | C | V | CV | I |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 3,600.00 | 0.02% | 99.88% | C | E | CE | II |
| SODIUM BICARBONATE INJECTION - 8.4% | 3,200.00 | 0.02% | 99.90% | C | N | CN | III |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 2,800.00 | 0.02% | 99.92% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 2,500.00 | 0.02% | 99.93% | C | V | CV | I |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 2,400.00 | 0.01% | 99.95% | C | N | CN | III |
| LOPERAMIDE CAPSULES - 2MG | 2,000.00 | 0.01% | 99.96% | C | V | CV | I |
| CHLORPHENIRAMINE TABLETS - 4MG | 1,860.00 | 0.01% | 99.97% | C | V | CV | I |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 1,700.00 | 0.01% | 99.98% | C | N | CN | III |
| LEVOTHYROXINE SODIUM 100MCG TAB | 1,380.00 | 0.01% | 99.99% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 1,300.00 | 0.01% | 100.00% | C | N | CN | III |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 500 | 0.00% | 100.00% | C | V | CV | I |
| | 16123985 | | | | | | |

**Appendix 3: KHUNYANGU SCH 2015-2016**

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 623,000.00 | 12.10% | 12.10% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 300,000.00 | 5.82% | 17.92% | A | V | AV | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 230,400.00 | 4.47% | 22.39% | A | V | AV | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 225,500.00 | 4.38% | 26.77% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 210,000.00 | 4.08% | 30.85% | A | V | AV | I |
| CEFIXIME TABLET 400MG | 175,000.00 | 3.40% | 34.25% | A | V | AV | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 171,000.00 | 3.32% | 37.57% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 168,000.00 | 3.26% | 40.83% | A | N | AN | I |
| OXYTOCIN INJECTION - 5 IU/ML | 168,000.00 | 3.26% | 44.09% | A | N | AN | I |
| DEXTROSE - 5% | 160,000.00 | 3.11% | 47.20% | A | V | AV | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 160,000.00 | 3.11% | 50.30% | A | N | AN | I |
| SODIUM HYPOCHLORITE SOLUTION | 158,100.00 | 3.07% | 53.37% | A | N | AN | I |
| ERYTHROMYCIN TABLETS - 250MG | 150,000.00 | 2.91% | 56.29% | A | N | AN | I |
| CIPROFLOXACIN TABLETS - 250MG | 148,500.00 | 2.88% | 59.17% | A | E | AE | I |
| ANTI-D (RH) INJECTION - 250MCG | 120,000.00 | 2.33% | 61.50% | A | N | AN | I |
| PARACETAMOL TABLETS - 500MG | 97,500.00 | 1.89% | 63.39% | A | V | AV | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 96,000.00 | 1.86% | 65.26% | A | N | AN | I |
| ETHANOL (DENATURED) - 94% | 88,400.00 | 1.72% | 66.97% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES 500MG | 82,500.00 | 1.60% | 68.57% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 80,000.00 | 1.55% | 70.13% | A | V | AV | I |
| CEFUROXIME 250MG TABS | 78,000.00 | 1.51% | 71.64% | A | N | AN | I |
| DICLOFENAC INJECTION - 75MG | 62,500.00 | 1.21% | 72.86% | B | V | BV | I |
| IBUPROFEN TABLETS - 200MG | 60,000.00 | 1.16% | 74.02% | B | N | BN | II |
| FLUCLOXACILLIN INJECTION - 250MG | 52,500.00 | 1.02% | 75.04% | B | V | BV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 51,000.00 | 0.99% | 76.03% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 47,600.00 | 0.92% | 76.95% | B | N | BN | II |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 44,800.00 | 0.87% | 77.82% | B | V | BV | I |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 42,000.00 | 0.82% | 78.64% | B | N | BN | II |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 36,000.00 | 0.70% | 79.34% | B | V | BV | I |
| FLUCONAZOLE CAPSULES - 50MG | 36,000.00 | 0.70% | 80.04% | B | N | BN | II |
| GABAPENTIN CAP 300MG | 36,000.00 | 0.70% | 80.74% | B | V | BV | I |
| HYDROCORTISONE INJECTION - 100MG | 34,800.00 | 0.68% | 81.41% | B | V | BV | I |
| PARACETAMOL SUSPENSION - 120MG/5ML | 33,600.00 | 0.65% | 82.06% | B | N | BN | II |
| CEFTRIAXONE INJECTION - 250MG | 32,000.00 | 0.62% | 82.69% | B | V | BV | I |
| DEXTROSE - 10% | 31,110.00 | 0.60% | 83.29% | B | N | BN | II |
| SODIUM LACTATE SOLUTION | 30,720.00 | 0.60% | 83.89% | B | E | BE | II |
| METFORMINE TABLETS - 500MG | 30,600.00 | 0.59% | 84.48% | B | N | BN | II |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 28,980.00 | 0.56% | 85.04% | B | V | BV | I |
| POVIDONE-IODINE SOLUTION - 10% | 28,420.00 | 0.55% | 85.60% | B | V | BV | I |
| GLIBENCLAMIDE TABLETS - 5MG | 28,000.00 | 0.54% | 86.14% | B | N | BN | II |
| PHENOBARBITONE TABLETS - 30MG | 28,000.00 | 0.54% | 86.68% | B | N | BN | II |
| METRONIDAZOLE INJECTION - 5MG/ML | 25,000.00 | 0.49% | 87.17% | B | N | BN | II |
| PREDNISOLONE TABLETS - 5MG | 23,400.00 | 0.45% | 87.62% | B | N | BN | II |
| CARBAMAZEPINE TABLETS 200MG | 22,500.00 | 0.44% | 88.06% | B | N | BN | II |

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|---|---|---|---|---|---|---|---|
| HYDRALAZINE INJECTION - 20MG/ML | 22,225.00 | 0.43% | 88.49% | B | N | BN | II |
| CLOTRIMAZOLE CREAM - 1% | 22,100.00 | 0.43% | 88.92% | B | N | BN | II |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 21,600.00 | 0.42% | 89.34% | B | N | BN | II |
| CEFTAZIDIME 1G INJ. | 21,140.00 | 0.41% | 89.75% | B | N | BN | II |
| Acyclovir 400mg Tabs | 21,000.00 | 0.41% | 90.16% | B | N | BN | II |
| GRISEOFULVIN TAB 125MG | 19,500.00 | 0.38% | 90.54% | C | N | CN | III |
| DICLOFENAC SODIUM TABLETS - 50MG | 19,320.00 | 0.38% | 90.91% | C | N | CN | III |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 18,000.00 | 0.35% | 91.26% | C | N | CN | III |
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 0.35% | 91.61% | C | V | CV | I |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 18,000.00 | 0.35% | 91.96% | C | V | CV | I |
| ENALAPRIL TABLETS - 5MG | 16,900.00 | 0.33% | 92.29% | C | V | CV | I |
| AZITHROMYCIN 500MG | 16,800.00 | 0.33% | 92.61% | C | N | CN | III |
| PENICILLIN BENZYL INJECTION - 5MU | 16,800.00 | 0.33% | 92.94% | C | N | CN | III |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 16,000.00 | 0.31% | 93.25% | C | V | CV | I |
| WATER FOR INJECTION | 16,000.00 | 0.31% | 93.56% | C | N | CN | III |
| SALBUTAMOL SYRUP - 2MG/5ML | 14,000.00 | 0.27% | 93.83% | C | N | CN | III |
| OMEPRAZOLE CAPSULES - 20MG | 13,500.00 | 0.26% | 94.10% | C | N | CN | III |
| QUININE SULPHATE TABLETS - 300MG | 13,500.00 | 0.26% | 94.36% | C | V | CV | I |
| OXYTOCIN INJECTION - 10 IU/ML | 13,200.00 | 0.26% | 94.61% | C | N | CN | III |
| SODIUM STIBOGLUCONATE - 100MG/ML | 13,000.00 | 0.25% | 94.87% | C | E | CV | I |
| NYSTATIN SUSPENSION - 100 000IU/ML | 12,900.00 | 0.25% | 95.12% | C | N | CN | III |
| ALCOHOL BASED HAND RUB | 12,000.00 | 0.23% | 95.35% | C | V | CV | I |
| METRONIDAZOLE TABLETS - 200MG | 12,000.00 | 0.23% | 95.58% | C | N | CN | III |
| FERROUS SULPHATE TABLETS - 200MG | 11,000.00 | 0.21% | 95.80% | C | V | CV | I |
| Cotrimoxazole 480mg Tabs | 9,650.00 | 0.19% | 95.98% | C | N | CN | III |
| REHYDRATION SALTS ORAL (ORS) | 9,300.00 | 0.18% | 96.16% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| SILVER SULPHADIAZINE CREAM - 1% | 9,000.00 | 0.17% | 96.34% | C | N | CN | III |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 8,640.00 | 0.17% | 96.51% | C | N | CN | III |
| PHENOBARBITONE INJECTION - 200MG/ML | 8,300.00 | 0.16% | 96.67% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 8,000.00 | 0.16% | 96.82% | C | N | CN | III |
| PARACETAMOL SUPPOSITORIES 125MG | 8,000.00 | 0.16% | 96.98% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 7,800.00 | 0.15% | 97.13% | C | N | CN | III |
| TINIDAZOLE TAB 500MG | 7,800.00 | 0.15% | 97.28% | C | N | CN | III |
| ETORICOXIB 60MG TABLETS | 7,590.00 | 0.15% | 97.43% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 7,200.00 | 0.14% | 97.57% | C | V | CV | I |
| GENTAMICIN INJECTION - 80MG-40MG/ML 2ML AMP | 7,200.00 | 0.14% | 97.71% | C | V | CV | I |
| METHYLDOPA TABLETS - 250MG | 7,100.00 | 0.14% | 97.85% | C | N | CN | III |
| DOXYCYCLINE CAPSULES - 100MG | 6,450.00 | 0.13% | 97.97% | C | N | CN | III |
| COMPOUND MAGNESIUM TRISILICATE TABLETS | 6,250.00 | 0.12% | 98.09% | C | V | CV | I |
| PARACETAMOL INJECTION 10MG/ML 100ML VIAL | 6,000.00 | 0.12% | 98.21% | C | V | CV | I |
| MULTIVITAMIN SYRUP | 5,640.00 | 0.11% | 98.32% | C | V | CV | I |
| TETRACYCLINE EYE OINTMENT -1% | 5,400.00 | 0.10% | 98.42% | C | V | CV | I |
| FOLIC ACID TABLETS - 5MG | 5,250.00 | 0.10% | 98.53% | C | N | CN | III |
| CHLORPROMAZINE TABLETS - 100MG | 4,925.00 | 0.10% | 98.62% | C | E | CE | II |
| FUROSEMIDE INJECTION - 20MG/2ML | 4,900.00 | 0.10% | 98.72% | C | N | CN | III |
| AMLODIPINE TABLET 5MG | 4,500.00 | 0.09% | 98.80% | C | V | CV | I |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 4,400.00 | 0.09% | 98.89% | C | N | CN | III |
| FLUPHENAZINE INJECTION - 25MG/ML | 4,300.00 | 0.08% | 98.97% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 3,400.00 | 0.07% | 99.04% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| INSULIN SOLUBLE - 100IU/ML | 3,300.00 | 0.06% | 99.10% | C | E | CE | II |
| RANITIDINE INJECTION - 50MG/2ML | 3,200.00 | 0.06% | 99.16% | C | N | CN | III |
| ALBENDAZOLE TABLETS 400MG | 3,000.00 | 0.06% | 99.22% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 3,000.00 | 0.06% | 99.28% | C | N | CN | III |
| ATROPINE INJECTION - 1MG/ML | 3,000.00 | 0.06% | 99.34% | C | V | CV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 3,000.00 | 0.06% | 99.40% | C | N | CN | III |
| AMITRIPTYLINE TABLETS - 25MG | 2,835.00 | 0.06% | 99.45% | C | V | CV | I |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 2,700.00 | 0.05% | 99.50% | C | V | CV | I |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 2,700.00 | 0.05% | 99.56% | C | N | CN | III |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 2,600.00 | 0.05% | 99.61% | C | V | CV | I |
| PENICILLIN BENZYL INJECTION - 1MU | 2,100.00 | 0.04% | 99.65% | C | N | CN | III |
| FUROSEMIDE TABLETS - 40MG | 1,750.00 | 0.03% | 99.68% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | 1,750.00 | 0.03% | 99.72% | C | V | CV | I |
| ETHANOL (DENATURED) - 70% | 1,600.00 | 0.03% | 99.75% | C | N | CN | III |
| CALAMINE LOTION - 15% | 1,500.00 | 0.03% | 99.78% | C | V | CV | I |
| FOLIC ACID TABLETS - 5MG | 1,375.00 | 0.03% | 99.80% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 1,255.00 | 0.02% | 99.83% | C | N | CN | III |
| CHLORPHENIRAMINE TABLETS - 4MG | 1,240.00 | 0.02% | 99.85% | C | V | CV | I |
| BENZHEXOL TABLETS - 5MG | 1,220.00 | 0.02% | 99.88% | C | V | CV | I |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 1,000.00 | 0.02% | 99.89% | C | N | CN | III |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 1,000.00 | 0.02% | 99.91% | C | N | CN | III |
| SALBUTAMOL TABLETS - 4MG | 1,000.00 | 0.02% | 99.93% | C | N | CN | III |
| GENTAMICIN INJECTION - 20MG-10MG/ML 2ML AMP | 900 | 0.02% | 99.95% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 880 | 0.02% | 99.97% | C | V | CV | I |
| CHLORAMPHENICAL INJECTION - 1GM | 380 | 0.01% | 99.98% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| METOCLOPRAMIDE INJECTION - 5MG/ML | 350 | 0.01% | 99.98% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 325 | 0.01% | 99.99% | C | N | CN | III |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 250 | 0.00% | 99.99% | C | V | CV | I |
| DIAZEPAM TAB 5MG | 225 | 0.00% | 100.00% | C | V | CV | I |
| ADRENALINE INJECTION - 1MG/ML | 100 | 0.00% | 100.00% | C | V | CV | I |
| | 5150445 | | | | | | |

**Appendix 4: KHUNYANGU SCH 2016-2017**

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | 200,000.00 | 11.55% | 11.55% | A | V | AV | I |
| DOXYCYCLINE CAPSULES - 100MG | 129,000.00 | 7.45% | 19.00% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 105,000.00 | 6.06% | 25.07% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 100,000.00 | 5.78% | 30.84% | A | V | AV | I |
| CIPROFLOXACIN TABLETS - 250MG | 99,000.00 | 5.72% | 36.56% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES 500MG | 82,500.00 | 4.77% | 41.33% | A | E | AE | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 60,000.00 | 3.47% | 44.79% | A | V | AV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 60,000.00 | 3.47% | 48.26% | A | V | AV | I |
| AMOXYCILLIN CAPSULES - 250MG | 56,000.00 | 3.23% | 51.49% | A | V | AV | I |
| ANTI-D (RH) INJECTION - 250MCG | 50,000.00 | 2.89% | 54.38% | A | N | AN | I |
| CEFIXIME TABLET 400MG | 50,000.00 | 2.89% | 57.27% | A | V | AV | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 50,000.00 | 2.89% | 60.16% | A | V | AV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 45,000.00 | 2.60% | 62.76% | A | V | AV | I |
| PENICILLIN BENZYL INJECTION - 5MU | 42,000.00 | 2.43% | 65.18% | A | N | AN | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 2.40% | 67.58% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | 35,000.00 | 2.02% | 69.60% | B | E | BE | II |
| ORAL REHYDRATION SALTS | 35,000.00 | 2.02% | 71.62% | B | N | BN | II |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 32,400.00 | 1.87% | 73.50% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | 32,000.00 | 1.85% | 75.34% | B | N | BN | II |
| DEXTROSE - 5% | 32,000.00 | 1.85% | 77.19% | B | N | BN | II |
| GRISEOFULVIN TAB 125MG | 29,250.00 | 1.69% | 78.88% | B | V | BV | I |
| Cotrimoxazole 480mg Tabs | 28,950.00 | 1.67% | 80.55% | B | V | BV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 24,000.00 | 1.39% | 81.94% | B | N | BN | II |
| PHENOBARBITONE TABLETS - 30MG | 21,000.00 | 1.21% | 83.15% | B | N | BN | II |
| ALBENDAZOLE TABLETS 400MG | 20,000.00 | 1.16% | 84.31% | B | V | BV | I |
| IBUPROFEN TABLETS - 200MG | 20,000.00 | 1.16% | 85.46% | B | V | BV | I |
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 1.04% | 86.50% | B | E | BE | II |
| Co-trimoxazole suspension, 240 mg/5ml | 17,000.00 | 0.98% | 87.49% | B | E | BE | II |
| CARBAMAZEPINE TABLETS 200MG | 15,000.00 | 0.87% | 88.35% | B | V | BV | I |
| CEFTAZIDIME 1G INJ. | 14,000.00 | 0.81% | 89.16% | B | V | BV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | 13,800.00 | 0.80% | 89.96% | B | N | BN | II |
| DEXTROSE - 10% | 12,240.00 | 0.71% | 90.66% | B | V | BV | I |
| METRONIDAZOLE TABLETS - 200MG | 12,000.00 | 0.69% | 91.36% | C | N | CN | III |
| AZITHROMYCIN 500MG | 10,000.00 | 0.58% | 91.94% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 10,000.00 | 0.58% | 92.51% | C | N | CN | III |
| HYDROCORTISONE INJECTION - 100MG | 8,700.00 | 0.50% | 93.02% | C | V | CV | I |
| CLOTRIMAZOLE CREAM - 1% | 8,500.00 | 0.49% | 93.51% | C | V | CV | I |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 7,200.00 | 0.42% | 93.92% | C | N | CN | III |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| GENTAMICIN INJECTION - 80MG-40MG/ML 2ML AMP | 7,200.00 | 0.42% | 94.34% | C | E | CE | II |
| NIFEDIPINE TABLETS - 20MG | 7,200.00 | 0.42% | 94.75% | C | V | CV | I |
| GLIBENCLAMIDE TABLETS - 5MG | 7,000.00 | 0.40% | 95.16% | C | V | CV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 6,350.00 | 0.37% | 95.53% | C | V | CV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 6,000.00 | 0.35% | 95.87% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 5,640.00 | 0.33% | 96.20% | C | V | CV | I |
| FERROUS SULPHATE TABLETS - 200MG | 5,500.00 | 0.32% | 96.52% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 5,000.00 | 0.29% | 96.80% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 4,400.00 | 0.25% | 97.06% | C | E | CE | II |
| FLUPHENAZINE INJECTION - 25MG/ML | 4,300.00 | 0.25% | 97.31% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 3,600.00 | 0.21% | 97.51% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 3,600.00 | 0.21% | 97.72% | C | V | CV | I |
| METHYLDOPA TABLETS - 250MG | 3,550.00 | 0.21% | 97.93% | C | V | CV | I |
| BENZHEXOL TABLETS - 5MG | 3,050.00 | 0.18% | 98.10% | C | E | CE | II |
| CHLORPROMAZINE TABLETS - 100MG | 2,955.00 | 0.17% | 98.27% | C | N | CN | III |
| POVIDONE-IODINE SOLUTION - 10% | 2,900.00 | 0.17% | 98.44% | C | N | CN | III |
| DOMPERIDONE 10MG TABLETS | 2,850.00 | 0.16% | 98.61% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 2,750.00 | 0.16% | 98.77% | C | V | CV | I |
| KETOCONAZOLE TABLETS - 200MG | 2,400.00 | 0.14% | 98.90% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 2,000.00 | 0.12% | 99.02% | C | N | CN | III |
| SILVER SULPHADIAZINE CREAM - 1% | 2,000.00 | 0.12% | 99.14% | C | N | CN | III |
| ENALAPRIL TABLETS - 5MG | 1,950.00 | 0.11% | 99.25% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 1,800.00 | 0.10% | 99.35% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | 1,750.00 | 0.10% | 99.45% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 1,600.00 | 0.09% | 99.55% | C | N | CN | III |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AMLODIPINE TABLET 5MG | 1,500.00 | 0.09% | 99.63% | C | V | CV | I |
| HALOPERIDOL TABLETS - 5MG | 1,255.00 | 0.07% | 99.70% | C | V | CV | I |
| CHLORPHENIRAMINE TABLETS - 4MG | 1,240.00 | 0.07% | 99.78% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 1,050.00 | 0.06% | 99.84% | C | N | CN | III |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 770 | 0.04% | 99.88% | C | V | CV | I |
| BENZYLBENZOATE EMULSION - 25% APPLICATION | 750 | 0.04% | 99.92% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 450 | 0.03% | 99.95% | C | V | CV | I |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 250 | 0.01% | 99.97% | C | N | CN | III |
| BISACODYL 5MG TABLETS | 250 | 0.01% | 99.98% | C | E | CE | II |
| DIAZEPAM TAB 5MG | 225 | 0.01% | 99.99% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 100 | 0.01% | 100.00% | C | V | CV | I |
| CALAMINE LOTION - 15% | 25 | 0.00% | 100.00% | C | V | CV | I |
| WATER FOR INJECTION | 4 | 0.00% | 100.00% | C | N | CN | III |
| | 1731254 | | | | | | |

## Appendix 5: NAMBALE SCH 2015-2016

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 457,800.00 | 12.53 % | 12.53% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 287,000.00 | 7.85% | 20.38% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 225,000.00 | 6.16% | 26.54% | A | N | AN | I |
| ERYTHROMYCIN TABLETS - 250MG | 187,500.00 | 5.13% | 31.67% | A | N | AN | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 120,000.00 | 3.28% | 34.95% | A | N | AN | I |
| SODIUM HYPOCHLORITE SOLUTION | 117,300.00 | 3.21% | 38.16% | A | N | AN | I |
| HYDROCORTISONE OINTMENT - 1% | 108,000.00 | 2.96% | 41.12% | A | V | AV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Co-trimoxazole suspension, 240 mg/5ml | 102,000.00 | 2.79% | 43.91% | A | N | AN | I |
| OXYTOCIN INJECTION - 5 IU/ML | 100,000.00 | 2.74% | 46.65% | A | N | AN | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 96,000.00 | 2.63% | 49.27% | A | V | AV | I |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 96,000.00 | 2.63% | 51.90% | A | N | AN | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 90,000.00 | 2.46% | 54.36% | A | N | AN | I |
| PARACETAMOL TABLETS - 500MG | 86,250.00 | 2.36% | 56.73% | A | V | AV | I |
| Cotrimoxazole 480mg Tabs | 82,990.00 | 2.27% | 59.00% | A | N | AN | I |
| CIPROFLOXACIN TABLETS - 250MG | 79,200.00 | 2.17% | 61.16% | A | V | AV | I |
| HYDROCORTISONE INJECTION - 100MG | 78,300.00 | 2.14% | 63.31% | A | V | AV | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 74,000.00 | 2.03% | 65.33% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | 70,000.00 | 1.92% | 67.25% | A | V | AV | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 60,000.00 | 1.64% | 68.89% | B | N | BN | II |
| ETHANOL (DENATURED) - 94% | 59,500.00 | 1.63% | 70.52% | B | V | BV | I |
| PARACETAMOL SUSPENSION - 120MG/5ML | 58,800.00 | 1.61% | 72.13% | B | N | BN | II |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 57,000.00 | 1.56% | 73.69% | B | V | BV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 56,000.00 | 1.53% | 75.22% | B | N | BN | II |
| ANTI-D (RH) INJECTION - 250MCG | 50,000.00 | 1.37% | 76.59% | B | N | BN | II |
| DOXYCYCLINE CAPSULES - 100MG | 47,730.00 | 1.31% | 77.89% | B | V | BV | I |
| NYSTATIN SUSPENSION - 100 000IU/ML | 43,000.00 | 1.18% | 79.07% | B | N | BN | II |
| DEXTROSE - 5% | 40,000.00 | 1.09% | 80.16% | B | N | BN | II |
| WATER FOR INJECTION | 40,000.00 | 1.09% | 81.26% | B | N | BN | II |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 38,400.00 | 1.05% | 82.31% | B | N | BN | II |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CLOTRIMAZOLE CREAM - 1% | 36,380.00 | 1.00% | 83.31% | B | N | BN | II |
| IBUPROFEN TABLETS - 200MG | 34,000.00 | 0.93% | 84.24% | B | N | BN | II |
| CEFTRIAXONE INJECTION - 250MG | 32,000.00 | 0.88% | 85.11% | B | V | BV | I |
| POVIDONE-IODINE SOLUTION - 10% | 31,900.00 | 0.87% | 85.98% | B | V | BV | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 30,750.00 | 0.84% | 86.83% | B | N | BN | II |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 27,000.00 | 0.74% | 87.57% | B | N | BN | II |
| CEFUROXIME 250MG TABS | 26,000.00 | 0.71% | 88.28% | B | N | BN | II |
| FERROUS SULPHATE TABLETS - 200MG | 22,000.00 | 0.60% | 88.88% | B | N | BN | II |
| DICLOFENAC INJECTION - 75MG | 20,000.00 | 0.55% | 89.43% | B | N | BN | II |
| GRISEOFULVIN TAB 125MG | 19,500.00 | 0.53% | 89.96% | B | V | BV | I |
| TETRACYCLINE EYE OINTMENT -1% | 16,200.00 | 0.44% | 90.40% | B | V | BV | I |
| METRONIDAZOLE TABLETS - 200MG | 16,000.00 | 0.44% | 90.84% | C | N | CN | III |
| HYDRALAZINE INJECTION - 20MG/ML | 15,875.00 | 0.43% | 91.28% | C | N | CN | III |
| OXYTOCIN INJECTION - 10 IU/ML | 15,600.00 | 0.43% | 91.70% | C | E | CE | II |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 12,800.00 | 0.35% | 92.05% | C | N | CN | III |
| CEFIXIME TABLET 400MG | 12,500.00 | 0.34% | 92.39% | C | V | CV | I |
| ALBENDAZOLE TABLETS 400MG | 12,000.00 | 0.33% | 92.72% | C | N | CN | III |
| ALCOHOL BASED HAND RUB | 12,000.00 | 0.33% | 93.05% | C | V | CV | I |
| AZITHROMYCIN 500MG | 12,000.00 | 0.33% | 93.38% | C | N | CN | III |
| SALBUTAMOL SYRUP - 2MG/5ML | 12,000.00 | 0.33% | 93.71% | C | N | CN | III |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 10,800.00 | 0.30% | 94.00% | C | N | CN | III |
| METHYLDOPA TABLETS - 250MG | 10,650.00 | 0.29% | 94.29% | C | N | CN | III |
| PENICILLIN BENZYL INJECTION - 1MU | 10,500.00 | 0.29% | 94.58% | C | V | CV | I |
| PREDNISOLONE TABLETS - 5MG | 10,200.00 | 0.28% | 94.86% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 9,000.00 | 0.25% | 95.11% | C | V | CV | I |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 9,000.00 | 0.25% | 95.35% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| CALAMINE LOTION - 15% | 7,750.00 | 0.21% | 95.57% | C | N | CN | III |
| PENICILLIN BENZATHINE INJECTION - 2.4 MU | 7,500.00 | 0.21% | 95.77% | C | V | CV | I |
| RETINOL (VITAMIN A)CAPSULES 50000IU | 7,200.00 | 0.20% | 95.97% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 7,050.00 | 0.19% | 96.16% | C | N | CN | III |
| Acyclovir 400mg Tabs | 7,000.00 | 0.19% | 96.35% | C | N | CN | III |
| SALBUTAMOL TABLETS - 4MG | 7,000.00 | 0.19% | 96.54% | C | N | CN | III |
| NIFEDIPINE TABLETS - 20MG | 6,120.00 | 0.17% | 96.71% | C | V | CV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | 6,072.00 | 0.17% | 96.88% | C | N | CN | III |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 6,000.00 | 0.16% | 97.04% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 6,000.00 | 0.16% | 97.21% | C | V | CV | I |
| SILVER SULPHADIAZINE CREAM - 1% | 6,000.00 | 0.16% | 97.37% | C | N | CN | III |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 5,250.00 | 0.14% | 97.51% | C | N | CN | III |
| METRONIDAZOLE INJECTION - 5MG/ML | 5,000.00 | 0.14% | 97.65% | C | V | CV | I |
| DEXTROSE - 10% | 4,896.00 | 0.13% | 97.79% | C | N | CN | III |
| SODIUM LACTATE SOLUTION | 4,800.00 | 0.13% | 97.92% | C | V | CV | I |
| GLUTARALDEHYDE 2% SOLUTION | 4,550.00 | 0.12% | 98.04% | C | V | CV | I |
| OMEPRAZOLE CAPSULES - 20MG | 4,500.00 | 0.12% | 98.16% | C | N | CN | III |
| ETHANOL (DENATURED) - 70% | 4,000.00 | 0.11% | 98.27% | C | N | CN | III |
| WATER BASED LUBRICANT (KY JELLY) | 3,300.00 | 0.09% | 98.36% | C | N | CN | III |
| TINIDAZOLE TAB 500MG | 3,250.00 | 0.09% | 98.45% | C | N | CN | III |
| SODIUM BICARBONATE INJECTION - 8.4% | 3,200.00 | 0.09% | 98.54% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 3,000.00 | 0.08% | 98.62% | C | V | CV | I |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 3,000.00 | 0.08% | 98.70% | C | V | CV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 3,000.00 | 0.08% | 98.79% | C | N | CN | III |
| INSULIN SOLUBLE - 100IU/ML | 3,000.00 | 0.08% | 98.87% | C | N | CN | III |
| AMITRIPTYLINE TABLETS - 25MG | 2,835.00 | 0.08% | 98.95% | C | N | CN | III |
| FUROSEMIDE INJECTION - 20MG/2ML | 2,800.00 | 0.08% | 99.02% | C | E | CE | II |

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|---|---|---|---|---|---|---|---|
| CHLORPHENIRAMINE TABLETS - 4MG | 2,604.00 | 0.07% | 99.09% | C | V | CV | I |
| FUROSEMIDE TABLETS - 40MG | 2,450.00 | 0.07% | 99.16% | C | N | CN | III |
| REHYDRATION SALTS ORAL (ORS) | 2,325.00 | 0.06% | 99.23% | C | N | CN | III |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 2,240.00 | 0.06% | 99.29% | C | N | CN | III |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 2,200.00 | 0.06% | 99.35% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 2,100.00 | 0.06% | 99.40% | C | N | CN | III |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 2,000.00 | 0.05% | 99.46% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 1,800.00 | 0.05% | 99.51% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 1,500.00 | 0.04% | 99.55% | C | N | CN | III |
| AMLODIPINE TABLET 5MG | 1,500.00 | 0.04% | 99.59% | C | N | CN | III |
| COMPOUND MAGNESIUM TRISILICATE TABLETS | 1,500.00 | 0.04% | 99.63% | C | N | CN | III |
| PARACETAMOL SUPPOSITORIES 125MG | 1,500.00 | 0.04% | 99.67% | C | N | CN | III |
| METFORMINE TABLETS - 500MG | 1,360.00 | 0.04% | 99.71% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 1,200.00 | 0.03% | 99.74% | C | N | CN | III |
| PARACETAMOL INJECTION 10MG/ML 100ML VIAL | 1,200.00 | 0.03% | 99.78% | C | N | CN | III |
| ATROPINE INJECTION - 1MG/ML | 1,000.00 | 0.03% | 99.80% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 850 | 0.02% | 99.83% | C | N | CN | III |
| LOPERAMIDE CAPSULES - 2MG | 800 | 0.02% | 99.85% | C | N | CN | III |
| RANITIDINE INJECTION - 50MG/2ML | 800 | 0.02% | 99.87% | C | N | CN | III |
| BISACODYL 5MG TABLETS | 750 | 0.02% | 99.89% | C | N | CN | III |
| GLIBENCLAMIDE TABLETS - 5MG | 700 | 0.02% | 99.91% | C | N | CN | III |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 700 | 0.02% | 99.93% | C | V | CV | I |
| ENALAPRIL TABLETS - 5MG | 650 | 0.02% | 99.95% | C | V | CV | I |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 500 | 0.01% | 99.96% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 480 | 0.01% | 99.97% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 440 | 0.01% | 99.98% | C | E | CE | II |
| METOCLOPRAMIDE TABLETS - 10MG | 325 | 0.01% | 99.99% | C | N | CN | III |
| DIAZEPAM TAB 5MG | 225 | 0.01% | 100.00% | C | N | CN | III |
| | 3654197 | | | | | | |

## Appendix 6: NAMBALE SCH 2016-2017

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | 200,000.00 | 15.08% | 15.08% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 125,000.00 | 9.42% | 24.50% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 105,000.00 | 7.92% | 32.41% | A | N | AN | I |
| CIPROFLOXACIN TABLETS - 250MG | 99,000.00 | 7.46% | 39.88% | A | V | AV | I |
| DOXYCYCLINE CAPSULES - 100MG | 77,400.00 | 5.83% | 45.71% | A | N | AN | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 60,000.00 | 4.52% | 50.23% | A | V | AV | I |
| GRISEOFULVIN TAB 125MG | 58,500.00 | 4.41% | 54.64% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 56,000.00 | 4.22% | 58.87% | A | N | AN | I |
| IBUPROFEN TABLETS - 200MG | 50,000.00 | 3.77% | 62.63% | A | V | AV | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 3.13% | 65.76% | A | N | AN | I |
| METRONIDAZOLE TABLETS - 200MG | 36,000.00 | 2.71% | 68.48% | A | V | AV | I |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 32,400.00 | 2.44% | 70.92% | A | N | AN | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 25,000.00 | 1.88% | 72.80% | B | N | BN | II |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 24,000.00 | 1.81% | 74.61% | B | V | BV | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V | 22,500.00 | 1.70% | 76.31% | B | N | BN | II |

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|---|---|---|---|---|---|---|---|
| INJECTION(POLYVALENT) 10ML AMPOULE | | | | | | | |
| Cotrimoxazole 480mg Tabs | 19,300.00 | 1.45% | 77.76% | B | V | BV | I |
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 1.36% | 79.12% | B | N | BN | II |
| GLIBENCLAMIDE TABLETS - 5MG | 17,500.00 | 1.32% | 80.44% | B | N | BN | II |
| CLOTRIMAZOLE CREAM - 1% | 17,000.00 | 1.28% | 81.72% | B | V | BV | I |
| Co-trimoxazole suspension, 240 mg/5ml | 17,000.00 | 1.28% | 83.00% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | 16,000.00 | 1.21% | 84.21% | B | V | BV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 15,000.00 | 1.13% | 85.34% | B | V | BV | I |
| HYDROCORTISONE INJECTION - 100MG | 14,500.00 | 1.09% | 86.43% | B | N | BN | II |
| NIFEDIPINE TABLETS - 20MG | 14,400.00 | 1.09% | 87.52% | B | N | BN | II |
| DICLOFENAC SODIUM TABLETS - 50MG | 13,800.00 | 1.04% | 88.56% | B | V | BV | I |
| FERROUS SULPHATE TABLETS - 200MG | 13,750.00 | 1.04% | 89.60% | B | V | BV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 13,000.00 | 0.98% | 90.58% | C | V | CV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 12,700.00 | 0.96% | 91.53% | C | V | CV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 12,000.00 | 0.90% | 92.44% | C | N | CV | I |
| ALBENDAZOLE TABLETS 400MG | 10,000.00 | 0.75% | 93.19% | C | V | CV | I |
| SILVER SULPHADIAZINE CREAM - 1% | 10,000.00 | 0.75% | 93.94% | C | V | CV | I |
| MULTIVITAMIN SYRUP | 9,400.00 | 0.71% | 94.65% | C | N | CN | III |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 9,000.00 | 0.68% | 95.33% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 9,000.00 | 0.68% | 96.01% | C | V | CV | I |
| CARBAMAZEPINE TABLETS 200MG | 7,500.00 | 0.57% | 96.58% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 5,000.00 | 0.38% | 96.95% | C | N | CN | III |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 4,500.00 | 0.34% | 97.29% | C | E | CE | II |
| PHENOBARBITONE TABLETS - 30MG | 4,200.00 | 0.32% | 97.61% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 4,000.00 | 0.30% | 97.91% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 4,000.00 | 0.30% | 98.21% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| FLUCLOXACILLIN INJECTION - 250MG | 3,500.00 | 0.26% | 98.48% | C | V | CV | I |
| ENALAPRIL TABLETS - 5MG | 3,250.00 | 0.24% | 98.72% | C | N | CN | III |
| POVIDONE-IODINE SOLUTION - 10% | 2,900.00 | 0.22% | 98.94% | C | N | CN | III |
| AMLODIPINE TABLET 5MG | 2,250.00 | 0.17% | 99.11% | C | V | CV | I |
| ATENOLOL TABLETS - 50MG | 2,200.00 | 0.17% | 99.27% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 1,700.00 | 0.13% | 99.40% | C | E | CE | II |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 1,200.00 | 0.09% | 99.49% | C | N | CN | III |
| AZITHROMYCIN 500MG | 1,200.00 | 0.09% | 99.58% | C | V | CV | I |
| ADRENALINE INJECTION - 1MG/ML | 1,000.00 | 0.08% | 99.66% | C | N | CN | III |
| DOMPERIDONE 10MG TABLETS | 950 | 0.07% | 99.73% | C | V | CV | I |
| DEXAMETHASONE INJECTION - 4MG/ML | 900 | 0.07% | 99.80% | C | N | CN | III |
| DIAZEPAM TAB 5MG | 900 | 0.07% | 99.87% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 800 | 0.06% | 99.93% | C | V | CV | I |
| BENZYLBENZOATE EMULSION - 25% APPLICATION | 600 | 0.05% | 99.97% | C | V | CV | I |
| BISACODYL 5MG TABLETS | 250 | 0.02% | 99.99% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 100 | 0.01% | 100.00% | C | V | CV | I |
| CALAMINE LOTION - 15% | 25 | 0.00% | 100.00% | C | N | CN | III |
| WATER FOR INJECTION | 4 | 0.00% | 100.00% | C | N | CN | III |
| | 1326579 | | | | | | |

## Appendix 7: PORT VICTORIA SCH 2015-2016

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 170,000.00 | 9.33% | 9.33% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 168,000.00 | 4.40% | 13.73% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 156,000.00 | 4.27% | 18.00% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 142,500.00 | 3.70% | 21.70% | A | N | AN | I |
| ERYTHROMYCIN TABLETS - 250MG | 124,700.00 | 3.52% | 25.22% | A | V | AV | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 120,000.00 | 3.29% | 28.51% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES 500MG | 120,000.00 | 3.23% | 31.74% | A | N | AN | I |
| HYDROCORTISONE OINTMENT - 1% | 115,000.00 | 2.96% | 34.70% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | 114,300.00 | 2.88% | 37.57% | A | N | AN | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 170,000.00 | 2.65% | 40.22% | A | V | AV | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 168,000.00 | 2.53% | 42.75% | A | V | AV | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 156,000.00 | 2.46% | 45.22% | A | N | AN | I |
| CEFIXIME TABLET 400MG | 142,500.00 | 2.36% | 47.58% | A | N | AN | I |
| SODIUM HYPOCHLORITE SOLUTION | 124,700.00 | 2.21% | 49.79% | A | N | AN | I |
| DEXTROSE - 5% | 120,000.00 | 2.00% | 51.79% | A | V | AV | I |
| OXYTOCIN INJECTION - 5 IU/ML | 120,000.00 | 1.97% | 53.76% | A | N | AN | I |
| CEFUROXIME 250MG TABS | 115,000.00 | 1.83% | 55.59% | A | V | AV | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 114,300.00 | 1.67% | 57.26% | A | N | AN | I |
| HYDROCORTISONE INJECTION - 100MG | 170,000.00 | 1.46% | 58.73% | A | V | AV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 168,000.00 | 1.41% | 60.13% | A | N | AN | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 156,000.00 | 1.41% | 61.54% | A | N | AN | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 142,500.00 | 1.35% | 62.89% | A | N | AN | I |
| HYDRALAZINE INJECTION - 20MG/ML | 124,700.00 | 1.34% | 64.23% | A | E | AE | I |
| PARACETAMOL TABLETS - 500MG | 90,000.00 | 1.06% | 65.29% | B | N | BN | II |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 89,600.00 | 1.05% | 66.34% | B | N | BN | II |
| FLUCLOXACILLIN INJECTION - 250MG | 87,500.00 | 1.03% | 67.37% | B | N | BN | II |
| DICLOFENAC INJECTION - 75MG | 86,000.00 | 1.01% | 68.38% | B | N | BN | II |
| METFORMINE TABLETS - 500MG | 81,600.00 | 0.96% | 69.34% | B | N | BN | II |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 81,250.00 | 0.95% | 70.29% | B | N | BN | II |
| METRONIDAZOLE INJECTION - 5MG/ML | 77,500.00 | 0.91% | 71.20% | B | V | BV | I |
| Cotrimoxazole 480mg Tabs | 77,200.00 | 0.91% | 72.10% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | 76,800.00 | 0.90% | 73.01% | B | V | BV | I |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG(MARCAINE HEAVY) | 76,500.00 | 0.90% | 73.90% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 76,500.00 | 0.90% | 74.80% | B | V | BV | I |
| ANTI-D (RH) INJECTION - 250MCG | 75,000.00 | 0.88% | 75.68% | B | N | BN | II |
| PREDNISOLONE TABLETS - 5MG | 68,400.00 | 0.80% | 76.48% | B | E | BE | II |
| CIPROFLOXACIN TABLETS - 250MG | 66,000.00 | 0.77% | 77.26% | B | N | BN | II |
| ETHANOL (DENATURED) - 94% | 63,750.00 | 0.75% | 78.01% | B | N | BN | II |
| SODIUM LACTATE SOLUTION | 60,000.00 | 0.70% | 78.71% | B | N | BN | II |
| PENICILLIN BENZYL INJECTION - 5MU | 58,800.00 | 0.69% | 79.40% | B | N | BN | II |
| WATER FOR INJECTION | 58,000.00 | 0.68% | 80.08% | B | N | BN | II |
| ALBENDAZOLE TABLETS 400MG | 52,000.00 | 0.61% | 80.69% | B | N | BN | II |
| DEXTROSE - 10% | 51,408.00 | 0.60% | 81.29% | B | N | BN | II |
| IBUPROFEN TABLETS - 200MG | 50,000.00 | 0.59% | 81.88% | B | N | BN | II |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 48,600.00 | 0.57% | 82.45% | B | N | BN | II |
| AMLODIPINE TABLET 5MG | 48,000.00 | 0.56% | 83.02% | B | V | BV | I |
| AZITHROMYCIN 500MG | 48,000.00 | 0.56% | 83.58% | B | V | BV | I |
| CARBAMAZEPINE TABLETS 200MG | 48,000.00 | 0.56% | 84.14% | B | V | BV | I |
| DOXYCYCLINE CAPSULES - 100MG | 45,150.00 | 0.53% | 84.67% | B | V | BV | I |
| OMEPRAZOLE CAPSULES - 20MG | 45,000.00 | 0.53% | 85.20% | B | N | BN | II |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 43,200.00 | 0.51% | 85.71% | B | N | BN | II |

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|---|---|---|---|---|---|---|---|
| NYSTATIN SUSPENSION - 100 000IU/ML | 43,000.00 | 0.50% | 86.21% | B | V | BV | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 0.49% | 86.70% | B | E | BE | II |
| PARACETAMOL SUSPENSION - 120MG/5ML | 37,800.00 | 0.44% | 87.14% | B | N | BN | II |
| Acyclovir 400mg Tabs | 36,400.00 | 0.43% | 87.57% | B | N | BN | II |
| CEPHRADINE CAPSULES 500MG | 36,000.00 | 0.42% | 87.99% | B | V | BV | I |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 36,000.00 | 0.42% | 88.41% | B | N | BN | II |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 34,500.00 | 0.40% | 88.82% | B | N | BN | II |
| SILVER SULPHADIAZINE CREAM - 1% | 34,000.00 | 0.40% | 89.22% | B | N | BN | II |
| POVIDONE-IODINE SOLUTION - 10% | 31,900.00 | 0.37% | 89.59% | B | N | BN | II |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 30,800.00 | 0.36% | 89.95% | B | N | BN | II |
| PHENOBARBITONE TABLETS - 30MG | 29,400.00 | 0.35% | 90.30% | C | E | CE | II |
| GRISEOFULVIN TAB 125MG | 29,250.00 | 0.34% | 90.64% | C | N | CN | III |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 28,980.00 | 0.34% | 90.98% | C | V | CV | I |
| NIFEDIPINE TABLETS - 20MG | 28,800.00 | 0.34% | 91.32% | C | V | CV | I |
| HALOTHANE INHALATION | 28,490.00 | 0.33% | 91.65% | C | N | CN | III |
| ENALAPRIL TABLETS - 5MG | 27,950.00 | 0.33% | 91.98% | C | V | CV | I |
| PENICILLIN BENZYL INJECTION - 1MU | 26,600.00 | 0.31% | 92.29% | C | N | CN | III |
| OXYTOCIN INJECTION - 10 IU/ML | 26,400.00 | 0.31% | 92.60% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 25,500.00 | 0.30% | 92.90% | C | N | CN | III |
| PARACETAMOL SUPPOSITORIES 125MG | 25,200.00 | 0.30% | 93.20% | C | N | CN | III |
| KETAMINE INJECTION - 50MG/ML | 23,000.00 | 0.27% | 93.47% | C | V | CV | I |
| QUININE SULPHATE TABLETS - 300MG | 22,500.00 | 0.26% | 93.73% | C | V | CV | I |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 22,500.00 | 0.26% | 94.00% | C | V | CV | I |
| PANCURONIUM INJECTION - 4MG/2ML | 18,400.00 | 0.22% | 94.21% | C | N | CN | III |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 18,000.00 | 0.21% | 94.42% | C | N | CN | III |
| METHYLDOPA TABLETS - 250MG | 17,750.00 | 0.21% | 94.63% | C | V | CV | I |

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|---|---|---|---|---|---|---|---|
| HEPARINE INJECTION - 5000UNITS/ML 5ML | 17,680.00 | 0.21% | 94.84% | C | N | CN | III |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 17,500.00 | 0.21% | 95.05% | C | V | CV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 16,800.00 | 0.20% | 95.24% | C | N | CN | III |
| THIOPENTONE SODIUM INJECTION - 500MG | 16,500.00 | 0.19% | 95.44% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 16,200.00 | 0.19% | 95.63% | C | N | CN | III |
| ETHANOL (DENATURED) - 70% | 16,000.00 | 0.19% | 95.81% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 16,000.00 | 0.19% | 96.00% | C | N | CN | III |
| GLIBENCLAMIDE TABLETS - 5MG | 14,000.00 | 0.16% | 96.17% | C | N | CN | III |
| REHYDRATION SALTS ORAL (ORS) | 13,950.00 | 0.16% | 96.33% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 13,160.00 | 0.15% | 96.48% | C | N | CN | III |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 12,600.00 | 0.15% | 96.63% | C | N | CN | III |
| AMITRIPTYLINE TABLETS - 25MG | 12,150.00 | 0.14% | 96.78% | C | V | CV | I |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 12,000.00 | 0.14% | 96.92% | C | N | CN | III |
| ALCOHOL BASED HAND RUB | 12,000.00 | 0.14% | 97.06% | C | V | CV | I |
| FLUCONAZOLE CAPSULES - 50MG | 12,000.00 | 0.14% | 97.20% | C | V | CV | I |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 12,000.00 | 0.14% | 97.34% | C | V | CV | I |
| ATRACURIUM INJECTION - 10MG/ML | 11,750.00 | 0.14% | 97.48% | C | V | CV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | 11,040.00 | 0.13% | 97.61% | C | N | CN | III |
| ATROPINE INJECTION - 1MG/ML | 11,000.00 | 0.13% | 97.73% | C | N | CN | III |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 10,400.00 | 0.12% | 97.86% | C | V | CV | I |
| SALBUTAMOL SYRUP - 2MG/5ML | 10,000.00 | 0.12% | 97.97% | C | N | CN | III |
| FUROSEMIDE INJECTION - 20MG/2ML | 9,100.00 | 0.11% | 98.08% | C | N | CN | III |
| GLUTARALDEHYDE 2% SOLUTION | 9,100.00 | 0.11% | 98.19% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 9,000.00 | 0.11% | 98.29% | C | E | CE | II |
| FLUPHENAZINE INJECTION - 25MG/ML | 8,600.00 | 0.10% | 98.39% | C | V | CV | I |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 8,400.00 | 0.10% | 98.49% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| METRONIDAZOLE TABLETS - 200MG | 8,000.00 | 0.09% | 98.59% | C | N | CN | III |
| CALAMINE LOTION - 15% | 7,500.00 | 0.09% | 98.67% | C | V | CV | I |
| CHLORPHENIRAMINE TABLETS - 4MG | 7,440.00 | 0.09% | 98.76% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 7,200.00 | 0.08% | 98.85% | C | N | CN | III |
| CEFTAZIDIME 1G INJ. | 7,000.00 | 0.08% | 98.93% | C | N | CN | III |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 6,600.00 | 0.08% | 99.01% | C | N | CN | III |
| TINIDAZOLE TAB 500MG | 6,500.00 | 0.08% | 99.08% | C | N | CN | III |
| INSULIN SOLUBLE - 100IU/ML | 6,300.00 | 0.07% | 99.16% | C | N | CN | III |
| BENZHEXOL TABLETS - 5MG | 6,100.00 | 0.07% | 99.23% | C | V | CV | I |
| ADRENALINE INJECTION - 1MG/ML | 6,000.00 | 0.07% | 99.30% | C | V | CV | I |
| MAGNESIUM SULPHATE INJ 4%, W/V,100ML BOTTLE | 5,800.00 | 0.07% | 99.37% | C | V | CV | I |
| TETRACYCLINE EYE OINTMENT -1% | 5,400.00 | 0.06% | 99.43% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 5,250.00 | 0.06% | 99.49% | C | N | CN | III |
| SALBUTAMOL TABLETS - 4MG | 4,000.00 | 0.05% | 99.54% | C | N | CN | III |
| FLUPENTHIXOL DECANOATE - 20MG/ML | 3,375.00 | 0.04% | 99.58% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 3,000.00 | 0.04% | 99.61% | C | N | CN | III |
| WATER BASED LUBRICANT (KY JELLY) | 2,750.00 | 0.03% | 99.65% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 2,510.00 | 0.03% | 99.68% | C | N | CN | III |
| PENICILLIN BENZATHINE INJECTION - 2.4 MU | 2,500.00 | 0.03% | 99.70% | C | N | CN | III |
| PARACETAMOL INJECTION 10MG/ML 100ML VIAL | 2,400.00 | 0.03% | 99.73% | C | V | CV | I |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG | 2,350.00 | 0.03% | 99.76% | C | V | CV | I |
| DIGOXIN TABLETS - 0.25MG | 2,300.00 | 0.03% | 99.79% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 2,200.00 | 0.03% | 99.81% | C | V | CV | I |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 2,000.00 | 0.02% | 99.84% | C | E | CE | II |
| LOPERAMIDE CAPSULES - 2MG | 2,000.00 | 0.02% | 99.86% | C | N | CN | III |
| FUROSEMIDE TABLETS - 40MG | 1,750.00 | 0.02% | 99.88% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| KETOCONAZOLE TABLETS - 200MG | 1,600.00 | 0.02% | 99.90% | C | V | CV | I |
| FERROUS SULPHATE TABLETS - 200MG | 1,375.00 | 0.02% | 99.92% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | 1,050.00 | 0.01% | 99.93% | C | V | CV | I |
| CHLORPROMAZINE TABLETS - 100MG | 985 | 0.01% | 99.94% | C | V | CV | I |
| GENTAMICIN INJECTION - 20MG- 10MG/ML 2ML AMP | 900 | 0.01% | 99.95% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 850 | 0.01% | 99.96% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 780 | 0.01% | 99.97% | C | N | CN | III |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 770 | 0.01% | 99.98% | C | N | CN | III |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 500 | 0.01% | 99.98% | C | V | CV | I |
| COMPOUND MAGNESIUM TRISILICATE TABLETS | 500 | 0.01% | 99.99% | C | V | CV | I |
| SODIUM BICARBONATE INJECTION - 8.4% | 320 | 0.00% | 99.99% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 180 | 0.00% | 100.00% | C | N | CN | III |
| BISACODYL 5MG TABLETS | 150 | 0.00% | 100.00% | C | N | CN | III |
| DIAZEPAM TAB 5MG | 135 | 0.00% | 100.00% | C | V | CV | I |
| SUXAMETHONIUM CHLORIDE INJECTION | 90 | 0.00% | 100.00% | C | N | CN | III |
| | 8521268 | | | | | | |



## Appendix 8: PORT VICTORIA SCH 2016-2017

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | 300,000.00 | 13.37 % | 13.37% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | 157,500.00 | 7.02% | 20.39% | A | E | AE | I |
| CIPROFLOXACIN TABLETS - 250MG | 132,000.00 | 5.88% | 26.28% | A | N | AN | I |
| DOXYCYCLINE CAPSULES - 100MG | 129,000.00 | 5.75% | 32.03% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 125,000.00 | 5.57% | 37.60% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MORPHINE SULPHATE INJECTION - 10MG/ML | 87,500.00 | 3.90% | 41.50% | A | V | AV | I |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 86,400.00 | 3.85% | 45.35% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 70,000.00 | 3.12% | 48.47% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | 70,000.00 | 3.12% | 51.59% | A | N | AN | I |
| ORAL REHYDRATION SALTS | 70,000.00 | 3.12% | 54.71% | A | E | AE | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 60,000.00 | 2.67% | 57.39% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES 500MG | 55,000.00 | 2.45% | 59.84% | A | V | AV | I |
| ANTI-D (RH) INJECTION - 250MCG | 50,000.00 | 2.23% | 62.07% | A | V | AV | I |
| CEFIXIME TABLET 400MG | 50,000.00 | 2.23% | 64.29% | A | E | AE | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 50,000.00 | 2.23% | 66.52% | A | N | AN | I |
| IBUPROFEN TABLETS - 200MG | 50,000.00 | 2.23% | 68.75% | A | N | AN | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 45,000.00 | 2.01% | 70.76% | A | V | AV | I |
| CEFTAZIDIME 1G INJ. | 42,000.00 | 1.87% | 72.63% | B | N | BN | II |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 1.85% | 74.48% | B | N | BN | II |
| METRONIDAZOLE TABLETS - 200MG | 40,000.00 | 1.78% | 76.26% | B | V | BV | I |
| GRISEOFULVIN TAB 125MG | 39,000.00 | 1.74% | 78.00% | B | V | BV | I |
| Co-trimoxazole suspension, 240 mg/5ml | 34,000.00 | 1.52% | 79.52% | B | N | BN | II |
| CEFTRIAXONE INJECTION - 250MG | 32,000.00 | 1.43% | 80.94% | B | V | BV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 31,750.00 | 1.42% | 82.36% | B | N | BN | II |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 30,000.00 | 1.34% | 83.70% | B | E | BE | II |
| HYDROCORTISONE INJECTION - 100MG | 29,000.00 | 1.29% | 84.99% | B | V | BV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 24,000.00 | 1.07% | 86.06% | B | V | BV | I |
| DEXTROSE - 10% | 22,644.00 | 1.01% | 87.07% | B | N | BN | II |
| AZITHROMYCIN 500MG | 20,000.00 | 0.89% | 87.96% | B | E | BE | II |
| SILVER SULPHADIAZINE CREAM - 1% | 20,000.00 | 0.89% | 88.85% | B | N | BN | II |

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|---|---|---|---|---|---|---|---|
| Cotrimoxazole 480mg Tabs | 19,300.00 | 0.86% | 89.71% | B | N | BN | II |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 18,000.00 | 0.80% | 90.51% | B | V | BV | I |
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 0.80% | 91.32% | B | E | BE | II |
| FLUPHENAZINE INJECTION - 25MG/ML | 17,200.00 | 0.77% | 92.08% | C | V | CV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 15,000.00 | 0.67% | 92.75% | C | N | CN | III |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 13,000.00 | 0.58% | 93.33% | C | V | CV | I |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 12,000.00 | 0.53% | 93.87% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 10,000.00 | 0.45% | 94.31% | C | V | CV | III |
| MULTIVITAMIN SYRUP | 9,400.00 | 0.42% | 94.73% | C | V | CV | I |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 9,000.00 | 0.40% | 95.13% | C | V | CV | I |
| POVIDONE-IODINE SOLUTION - 10% | 8,700.00 | 0.39% | 95.52% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 8,500.00 | 0.38% | 95.90% | C | N | CN | III |
| DICLOFENAC SODIUM TABLETS - 50MG | 8,280.00 | 0.37% | 96.27% | C | N | CN | III |
| ALBENDAZOLE TABLETS 400MG | 8,000.00 | 0.36% | 96.62% | C | N | CN | III |
| NIFEDIPINE TABLETS - 20MG | 7,200.00 | 0.32% | 96.94% | C | V | CV | I |
| METHYLDOPA TABLETS - 250MG | 7,100.00 | 0.32% | 97.26% | C | V | CV | I |
| GLIBENCLAMIDE TABLETS - 5MG | 7,000.00 | 0.31% | 97.57% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 7,000.00 | 0.31% | 97.88% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 6,400.00 | 0.29% | 98.17% | C | V | CV | I |
| FOLIC ACID TABLETS - 5MG | 5,500.00 | 0.25% | 98.42% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 4,500.00 | 0.20% | 98.62% | C | N | CN | III |
| SUXAMETHONIUM CHLORIDE INJECTION | 4,500.00 | 0.20% | 98.82% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 4,000.00 | 0.18% | 98.99% | C | E | CE | II |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 3,850.00 | 0.17% | 99.17% | C | V | CV | I |
| CHLORAMPHENICAL INJECTION - 1GM | 3,800.00 | 0.17% | 99.34% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 3,600.00 | 0.16% | 99.50% | C | V | CV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ENALAPRIL TABLETS - 5MG | 3,250.00 | 0.14% | 99.64% | C | V | CV | I |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 2,400.00 | 0.11% | 99.75% | C | V | CV | I |
| DOMPERIDONE 10MG TABLETS | 1,900.00 | 0.08% | 99.83% | C | E | CE | II |
| AMLODIPINE TABLET 5MG | 1,500.00 | 0.07% | 99.90% | C | V | CV | I |
| ADRENALINE INJECTION - 1MG/ML | 1,000.00 | 0.04% | 99.94% | C | N | CN | III |
| CHLORPHENIRAMINE TABLETS - 4MG | 620 | 0.03% | 99.97% | C | V | CV | I |
| BISACODYL 5MG TABLETS | 500 | 0.02% | 99.99% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 100 | 0.00% | 100.00% | C | N | CN | III |
| CALAMINE LOTION - 15% | 25 | 0.00% | 100.00% | C | V | CV | I |
| WATER FOR INJECTION | 4 | 0.00% | 100.00% | C | N | CN | III |
| | 2243423 | | | | | | |

## Appendix 9: SIO PORT SCH 2015-2016

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 381,500.00 | 13.95% | 13.95% | A | N | AN | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 270,000.00 | 9.87% | 23.82% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 154,000.00 | 5.63% | 29.45% | A | V | AV | I |
| NYSTATIN SUSPENSION - 100 000IU/ML | 129,000.00 | 4.72% | 34.17% | A | N | AN | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 105,000.00 | 3.84% | 38.01% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 105,000.00 | 3.84% | 41.85% | A | N | AN | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 102,500.00 | 3.75% | 45.59% | A | V | AV | I |
| ERYTHROMYCIN TABLETS - 250MG | 100,000.00 | 3.66% | 49.25% | A | V | AV | I |
| OXYTOCIN INJECTION - 5 IU/ML | 100,000.00 | 3.66% | 52.91% | A | N | AN | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Co-trimoxazole suspension, 240 mg/5ml | 88,400.00 | 3.23% | 56.14% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 87,500.00 | 3.20% | 59.34% | A | V | AV | I |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 76,800.00 | 2.81% | 62.15% | A | V | AV | I |
| ETHANOL (DENATURED) - 94% | 76,500.00 | 2.80% | 64.94% | A | V | AV | I |
| SODIUM HYPOCHLORITE SOLUTION | 61,200.00 | 2.24% | 67.18% | A | N | AN | I |
| ANTI-D (RH) INJECTION - 250MCG | 50,000.00 | 1.83% | 69.01% | A | N | AN | I |
| PARACETAMOL SUSPENSION - 120MG/5ML | 46,200.00 | 1.69% | 70.70% | A | N | AN | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 37,200.00 | 1.36% | 72.06% | B | V | BV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 36,000.00 | 1.32% | 73.37% | B | N | BN | II |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 35,000.00 | 1.28% | 74.65% | B | N | BN | II |
| REHYDRATION SALTS ORAL (ORS) | 27,900.00 | 1.02% | 75.67% | B | N | BN | II |
| CEFIXIME TABLET 400MG | 27,500.00 | 1.01% | 76.68% | B | V | BV | I |
| OMEPRAZOLE CAPSULES - 20MG | 27,000.00 | 0.99% | 77.67% | B | N | BN | II |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 26,000.00 | 0.95% | 78.62% | B | N | BN | II |
| DOXYCYCLINE CAPSULES - 100MG | 25,800.00 | 0.94% | 79.56% | B | N | BN | II |
| MAGNESIUM SULPHATE INJECTION - 50% | 25,200.00 | 0.92% | 80.48% | B | N | BN | II |
| IBUPROFEN TABLETS - 200MG | 25,000.00 | 0.91% | 81.40% | B | N | BN | II |
| OXYTOCIN INJECTION - 10 IU/ML | 22,800.00 | 0.83% | 82.23% | B | E | BE | II |
| Acyclovir 400mg Tabs | 21,000.00 | 0.77% | 83.00% | B | V | BV | I |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 19,320.00 | 0.71% | 83.70% | B | N | BN | II |
| Cotrimoxazole 480mg Tabs | 19,300.00 | 0.71% | 84.41% | B | V | BV | I |
| ALCOHOL BASED HAND RUB | 19,200.00 | 0.70% | 85.11% | B | N | BN | II |
| PARACETAMOL TABLETS - 500MG | 18,750.00 | 0.69% | 85.80% | B | N | BN | II |
| DEXTROSE - 5% | 18,000.00 | 0.66% | 86.46% | B | E | BE | II |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 18,000.00 | 0.66% | 87.11% | B | V | BV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| HYDROCORTISONE OINTMENT - 1% | 18,000.00 | 0.66% | 87.77% | B | N | BN | II |
| RETINOL (VITAMIN A)CAPSULES 50000IU | 18,000.00 | 0.66% | 88.43% | B | V | BV | I |
| METHYLDOPA TABLETS - 250MG | 17,750.00 | 0.65% | 89.08% | B | N | BN | II |
| POVIDONE-IODINE SOLUTION - 10% | 16,820.00 | 0.61% | 89.69% | B | V | BV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | 16,560.00 | 0.61% | 90.30% | B | V | BV | I |
| CIPROFLOXACIN TABLETS - 250MG | 16,500.00 | 0.60% | 90.90% | C | N | CN | III |
| HYDROCORTISONE INJECTION - 100MG | 13,630.00 | 0.50% | 91.40% | C | N | CN | III |
| QUININE SULPHATE TABLETS - 300MG | 13,500.00 | 0.49% | 91.89% | C | N | CN | III |
| DEXTROSE - 10% | 12,240.00 | 0.45% | 92.34% | C | E | CE | II |
| ALBENDAZOLE TABLETS 400MG | 10,000.00 | 0.37% | 92.71% | C | V | CV | I |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 9,900.00 | 0.36% | 93.07% | C | N | CN | III |
| GRISEOFULVIN TAB 125MG | 9,750.00 | 0.36% | 93.43% | C | V | CV | I |
| SODIUM LACTATE SOLUTION | 9,600.00 | 0.35% | 93.78% | C | N | CN | III |
| PREDNISOLONE TABLETS - 5MG | 9,000.00 | 0.33% | 94.11% | C | N | CN | III |
| TETRACYCLINE EYE OINTMENT -1% | 9,000.00 | 0.33% | 94.43% | C | V | CV | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 8,550.00 | 0.31% | 94.75% | C | V | CV | I |
| PENICILLIN BENZYL INJECTION - 5MU | 8,400.00 | 0.31% | 95.05% | C | N | CN | III |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 8,000.00 | 0.29% | 95.35% | C | N | CN | III |
| HYDRALAZINE INJECTION - 20MG/ML | 6,350.00 | 0.23% | 95.58% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 6,000.00 | 0.22% | 95.80% | C | N | CN | III |
| PARACETAMOL SUPPOSITORIES 125MG | 6,000.00 | 0.22% | 96.02% | C | V | CV | I |
| SILVER SULPHADIAZINE CREAM - 1% | 6,000.00 | 0.22% | 96.24% | C | V | CV | I |
| METFORMINE TABLETS - 500MG | 5,440.00 | 0.20% | 96.44% | C | N | CN | III |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 5,400.00 | 0.20% | 96.63% | C | N | CN | III |
| ENALAPRIL TABLETS - 5MG | 5,200.00 | 0.19% | 96.82% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 4,400.00 | 0.16% | 96.98% | C | V | CV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PHENOBARBITONE INJECTION - 200MG/ML | 4,150.00 | 0.15% | 97.14% | C | N | CN | III |
| AZITHROMYCIN 500MG | 4,000.00 | 0.15% | 97.28% | C | V | CV | I |
| SALBUTAMOL SYRUP - 2MG/5ML | 4,000.00 | 0.15% | 97.43% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 3,600.00 | 0.13% | 97.56% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 3,290.00 | 0.12% | 97.68% | C | V | CV | I |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 3,000.00 | 0.11% | 97.79% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 2,800.00 | 0.10% | 97.89% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 2,700.00 | 0.10% | 97.99% | C | V | CV | I |
| TINIDAZOLE TAB 500MG | 2,600.00 | 0.10% | 98.09% | C | V | CV | I |
| CALAMINE LOTION - 15% | 2,500.00 | 0.09% | 98.18% | C | N | CN | III |
| METRONIDAZOLE INJECTION - 5MG/ML | 2,500.00 | 0.09% | 98.27% | C | N | CN | III |
| GLIBENCLAMIDE TABLETS - 5MG | 2,450.00 | 0.09% | 98.36% | C | V | CV | I |
| WATER FOR INJECTION | 2,400.00 | 0.09% | 98.45% | C | N | CN | III |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 2,240.00 | 0.08% | 98.53% | C | V | CV | I |
| WATER BASED LUBRICANT (KY JELLY) | 2,200.00 | 0.08% | 98.61% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 2,100.00 | 0.08% | 98.69% | C | V | CV | I |
| FUROSEMIDE TABLETS - 40MG | 2,100.00 | 0.08% | 98.76% | C | N | CN | III |
| PENICILLIN BENZYL INJECTION - 1MU | 2,100.00 | 0.08% | 98.84% | C | N | CN | III |
| AMITRIPTYLINE TABLETS - 25MG | 2,025.00 | 0.07% | 98.91% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 2,000.00 | 0.07% | 98.99% | C | N | CN | III |
| CHLORPHENIRAMINE TABLETS - 4MG | 1,922.00 | 0.07% | 99.06% | C | V | CV | I |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 1,920.00 | 0.07% | 99.13% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 1,700.00 | 0.06% | 99.19% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 1,700.00 | 0.06% | 99.25% | C | V | CV | I |
| METRONIDAZOLE TABLETS - 200MG | 1,600.00 | 0.06% | 99.31% | C | N | CN | III |
| AMLODIPINE TABLET 5MG | 1,500.00 | 0.05% | 99.36% | C | V | CV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DICLOFENAC INJECTION - 75MG | 1,500.00 | 0.05% | 99.42% | C | N | CN | III |
| INSULIN SOLUBLE - 100IU/ML | 1,500.00 | 0.05% | 99.47% | C | V | CV | I |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 1,500.00 | 0.05% | 99.53% | C | N | CN | III |
| FERROUS SULPHATE TABLETS - 200MG | 1,375.00 | 0.05% | 99.58% | C | N | CN | III |
| CEFUROXIME 250MG TABS | 1,300.00 | 0.05% | 99.63% | C | V | CV | I |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 1,200.00 | 0.04% | 99.67% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 1,200.00 | 0.04% | 99.71% | C | N | CN | III |
| NIFEDIPINE TABLETS - 20MG | 1,080.00 | 0.04% | 99.75% | C | N | CN | III |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 1,080.00 | 0.04% | 99.79% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 1,000.00 | 0.04% | 99.83% | C | V | CV | I |
| GENTAMICIN INJECTION - 20MG- 10MG/ML 2ML AMP | 900 | 0.03% | 99.86% | C | N | CN | III |
| PENICILLIN BENZATHINE INJECTION - 2.4 MU | 750 | 0.03% | 99.89% | C | N | CN | III |
| CEFTRIAXONE INJECTION - 250MG | 640 | 0.02% | 99.91% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 390 | 0.01% | 99.93% | C | N | CN | III |
| FLUCLOXACILLIN INJECTION - 250MG | 350 | 0.01% | 99.94% | C | V | CV | I |
| FUROSEMIDE INJECTION - 20MG/2ML | 350 | 0.01% | 99.95% | C | N | CN | III |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 350 | 0.01% | 99.97% | C | N | CN | III |
| LOPERAMIDE CAPSULES - 2MG | 300 | 0.01% | 99.98% | C | V | CV | I |
| DIAZEPAM TAB 5MG | 225 | 0.01% | 99.99% | C | N | CN | III |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 200 | 0.01% | 99.99% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 180 | 0.01% | 100.00% | C | V | CV | I |
| | 2735027 | | | | | | |

## Appendix 10: SIO PORT SCH 2016-2017

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | 200,000.00 | 29.29 % | 29.29% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 125,000.00 | 18.31 % | 47.60% | A | N | AN | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 60,000.00 | 8.79% | 56.39% | A | N | AN | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 6.08% | 62.47% | A | N | AN | I |
| ORAL REHYDRATION SALTS | 35,000.00 | 5.13% | 67.59% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 35,000.00 | 5.13% | 72.72% | B | N | BN | II |
| CIPROFLOXACIN TABLETS - 250MG | 33,000.00 | 4.83% | 77.55% | B | N | BN | II |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 24,000.00 | 3.52% | 81.07% | B | N | BN | II |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 22,500.00 | 3.30% | 84.36% | B | N | BN | II |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 21,600.00 | 3.16% | 87.53% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 17,000.00 | 2.49% | 90.02% | B | N | BN | II |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 15,000.00 | 2.20% | 92.21% | B | V | BV | I |
| CHLORAMPHENICAL INJECTION - 1GM | 7,600.00 | 1.11% | 93.33% | C | N | CN | III |
| FLUCLOXACILLIN INJECTION - 250MG | 7,000.00 | 1.03% | 94.35% | C | N | CN | III |
| DICLOFENAC SODIUM TABLETS - 50MG | 5,520.00 | 0.81% | 95.16% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 5,000.00 | 0.73% | 95.89% | C | N | CN | III |
| ALBENDAZOLE TABLETS 400MG | 5,000.00 | 0.73% | 96.62% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 3,600.00 | 0.53% | 97.15% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 3,500.00 | 0.51% | 97.66% | C | N | CN | III |
| POVIDONE-IODINE SOLUTION - 10% | 2,900.00 | 0.42% | 98.09% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 2,510.00 | 0.37% | 98.46% | C | V | CV | III |
| FOLIC ACID TABLETS - 5MG | 2,100.00 | 0.31% | 98.76% | C | V | CV | I |
| PHENYTOIN SODIUM TABLETS - 50MG | 1,750.00 | 0.26% | 99.02% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 1,500.00 | 0.22% | 99.24% | C | N | CN | III |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BENZHEXOL TABLETS - 5MG | 1,220.00 | 0.18% | 99.42% | C | V | CV | I |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 850 | 0.12% | 99.54% | C | V | CV | I |
| AZITHROMYCIN 500MG | 800 | 0.12% | 99.66% | C | V | CV | I |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 750 | 0.11% | 99.77% | C | N | CN | III |
| AMLODIPINE TABLET 5MG | 750 | 0.11% | 99.88% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 240 | 0.04% | 99.91% | C | N | CN | III |
| DIAZEPAM TAB 5MG | 225 | 0.03% | 99.95% | C | E | CE | II |
| DEXAMETHASONE INJECTION - 4MG/ML | 180 | 0.03% | 99.97% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 180 | 0.03% | 100.00% | C | V | CV | I |
| | 682775 | | | | | | |

## Appendix 11: TESO NORTH SCH 2015-2016

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 416,500.00 | 4.39% | 4.39% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 378,000.00 | 3.98% | 8.37% | A | V | AV | I |
| CEFTAZIDIME 1G INJ. | 365,820.00 | 3.85% | 12.23% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 364,000.00 | 3.84% | 16.06% | A | V | AV | I |
| ERYTHROMYCIN TABLETS - 250MG | 350,000.00 | 3.69% | 19.75% | A | V | AV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 300,000.00 | 3.16% | 22.91% | A | N | AN | I |
| DEXTROSE - 5% | 272,000.00 | 2.87% | 25.77% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 250,000.00 | 2.63% | 28.41% | A | V | AV | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 228,000.00 | 2.40% | 30.81% | A | N | AN | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 225,500.00 | 2.38% | 33.19% | A | V | AV | I |
| PENICILLIN BENZYL INJECTION - 5MU | 224,000.00 | 2.36% | 35.55% | A | N | AN | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 216,000.00 | 2.28% | 37.82% | A | N | AN | I |

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|---|---|---|---|---|---|---|---|
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 210,000.00 | 2.21% | 40.04% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | 210,000.00 | 2.21% | 42.25% | A | N | AN | I |
| SODIUM HYPOCHLORITE SOLUTION | 204,000.00 | 2.15% | 44.40% | A | N | AN | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 201,600.00 | 2.12% | 46.52% | A | N | AN | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 196,000.00 | 2.07% | 48.59% | A | N | AN | I |
| OXYTOCIN INJECTION - 5 IU/ML | 168,000.00 | 1.77% | 50.36% | A | N | AN | I |
| CIPROFLOXACIN TABLETS - 250MG | 165,000.00 | 1.74% | 52.09% | A | V | AV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 165,000.00 | 1.74% | 53.83% | A | N | AN | I |
| ANTI-D (RH) INJECTION - 250MCG | 150,000.00 | 1.58% | 55.41% | A | N | AN | I |
| IBUPROFEN TABLETS - 200MG | 150,000.00 | 1.58% | 56.99% | A | V | AV | I |
| DEXTROSE - 10% | 146,880.00 | 1.55% | 58.54% | A | N | AN | I |
| Acyclovir 400mg Tabs | 126,000.00 | 1.33% | 59.87% | A | V | AV | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 125,000.00 | 1.32% | 61.19% | A | V | AV | I |
| HYDROCORTISONE INJECTION - 100MG | 121,800.00 | 1.28% | 62.47% | B | N | BN | II |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 121,440.00 | 1.28% | 63.75% | B | V | BV | I |
| FLUCONAZOLE CAPSULES - 50MG | 120,000.00 | 1.26% | 65.01% | B | V | BV | I |
| ETHANOL (DENATURED) - 94% | 119,000.00 | 1.25% | 66.27% | B | N | BN | II |
| PARACETAMOL TABLETS - 500MG | 112,500.00 | 1.19% | 67.45% | B | V | BV | I |
| FLUPENTHIXOL DECANOATE - 20MG/ML | 101,250.00 | 1.07% | 68.52% | B | N | BN | II |
| FLUPHENAZINE INJECTION - 25MG/ML | 94,600.00 | 1.00% | 69.52% | B | N | BN | II |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG(MARCAINE HEAVY) | 90,000.00 | 0.95% | 70.46% | B | V | BV | I |
| SODIUM LACTATE SOLUTION | 87,600.00 | 0.92% | 71.39% | B | N | BN | II |
| METRONIDAZOLE INJECTION - 5MG/ML | 87,500.00 | 0.92% | 72.31% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 250MG | 86,400.00 | 0.91% | 73.22% | B | N | BN | II |
| PARACETAMOL SUSPENSION - 120MG/5ML | 84,000.00 | 0.89% | 74.10% | B | E | BE | II |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FLUCLOXACILLIN CAPSULES 500MG | 82,500.00 | 0.87% | 74.97% | B | N | BN | II |
| PENICILLIN BENZYL INJECTION - 1MU | 77,000.00 | 0.81% | 75.78% | B | N | BN | II |
| CARBAMAZEPINE TABLETS 200MG | 75,000.00 | 0.79% | 76.57% | B | V | BV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 75,000.00 | 0.79% | 77.36% | B | V | BV | I |
| OXYTOCIN INJECTION - 10 IU/ML | 72,000.00 | 0.76% | 78.12% | B | N | BN | II |
| ATRACURIUM INJECTION - 10MG/ML | 70,500.00 | 0.74% | 78.87% | B | V | BV | I |
| DICLOFENAC INJECTION - 75MG | 65,000.00 | 0.68% | 79.55% | B | V | BV | I |
| WATER FOR INJECTION | 60,000.00 | 0.63% | 80.18% | B | N | BN | II |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 57,600.00 | 0.61% | 80.79% | B | V | BV | I |
| POVIDONE-IODINE SOLUTION - 10% | 57,420.00 | 0.60% | 81.40% | B | N | BN | II |
| CEFUROXIME 250MG TABS | 52,000.00 | 0.55% | 81.94% | B | V | BV | I |
| CEFIXIME TABLET 400MG | 50,000.00 | 0.53% | 82.47% | B | N | BN | II |
| PARACETAMOL SUPPOSITORIES 125MG | 50,000.00 | 0.53% | 83.00% | B | E | BE | II |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 48,000.00 | 0.51% | 83.50% | B | N | BN | II |
| SILVER SULPHADIAZINE CREAM - 1% | 46,000.00 | 0.48% | 83.99% | B | N | BN | II |
| QUININE SULPHATE TABLETS - 300MG | 45,000.00 | 0.47% | 84.46% | B | V | BV | I |
| CEFTRIAXONE INJECTION - 1G -IV WITH DILUENT | 40,000.00 | 0.42% | 84.88% | B | N | BN | II |
| METRONIDAZOLE TABLETS - 200MG | 40,000.00 | 0.42% | 85.30% | B | V | BV | I |
| CHLORPROMAZINE TABLETS - 100MG | 39,400.00 | 0.42% | 85.72% | B | N | BN | II |
| ETORICOXIB 60MG TABLETS | 37,950.00 | 0.40% | 86.12% | B | N | BN | II |
| ATENOLOL TABLETS - 50MG | 36,080.00 | 0.38% | 86.50% | B | N | BN | II |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 36,000.00 | 0.38% | 86.88% | B | V | BV | I |
| METHYLDOPA TABLETS - 250MG | 35,500.00 | 0.37% | 87.25% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 34,000.00 | 0.36% | 87.61% | B | V | BV | I |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 32,400.00 | 0.34% | 87.95% | B | V | BV | I |
| CLOTRIMAZOLE CREAM - 1% | 32,300.00 | 0.34% | 88.29% | B | N | BN | II |
| METFORMINE TABLETS - 500MG | 30,600.00 | 0.32% | 88.61% | B | N | BN | II |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ALCOHOL BASED HAND RUB | 30,000.00 | 0.32% | 88.93% | B | N | BN | II |
| GRISEOFULVIN TAB 125MG | 29,250.00 | 0.31% | 89.24% | B | E | BE | II |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 28,980.00 | 0.31% | 89.54% | B | N | BN | II |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 28,800.00 | 0.30% | 89.85% | B | N | BN | II |
| MULTIVITAMIN SYRUP | 28,200.00 | 0.30% | 90.14% | C | N | CN | III |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 27,000.00 | 0.28% | 90.43% | C | N | CN | III |
| TETRACYCLINE EYE OINTMENT -1% | 27,000.00 | 0.28% | 90.71% | C | N | CN | III |
| PREDNISOLONE TABLETS - 5MG | 26,400.00 | 0.28% | 90.99% | C | V | CV | I |
| AZITHROMYCIN 500MG | 26,000.00 | 0.27% | 91.27% | C | V | CV | I |
| SALBUTAMOL SYRUP - 2MG/5ML | 26,000.00 | 0.27% | 91.54% | C | N | CN | III |
| DOXYCYCLINE CAPSULES - 100MG | 25,800.00 | 0.27% | 91.81% | C | V | CV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 25,400.00 | 0.27% | 92.08% | C | N | CN | III |
| MORPHINE POWDER | 25,000.00 | 0.26% | 92.34% | C | N | CN | III |
| HALOTHANE INHALATION | 24,420.00 | 0.26% | 92.60% | C | V | CV | I |
| REHYDRATION SALTS ORAL (ORS) | 23,250.00 | 0.24% | 92.85% | C | N | CN | III |
| OMEPRAZOLE CAPSULES - 20MG | 22,500.00 | 0.24% | 93.08% | C | N | CN | III |
| Cotrimoxazole 480mg Tabs | 21,230.00 | 0.22% | 93.31% | C | V | CV | I |
| FOLIC ACID TABLETS - 5MG | 21,000.00 | 0.22% | 93.53% | C | N | CN | III |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 20,000.00 | 0.21% | 93.74% | C | V | CV | I |
| ENALAPRIL TABLETS - 5MG | 19,500.00 | 0.21% | 93.94% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 18,825.00 | 0.20% | 94.14% | C | N | CN | III |
| BENZHEXOL TABLETS - 5MG | 18,300.00 | 0.19% | 94.33% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 18,000.00 | 0.19% | 94.52% | C | V | CV | I |
| NIFEDIPINE TABLETS - 20MG | 18,000.00 | 0.19% | 94.71% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 17,500.00 | 0.18% | 94.90% | C | E | CE | II |
| MAGNESIUM SULPHATE INJ 4%, W/V,100ML BOTTLE | 17,400.00 | 0.18% | 95.08% | C | N | CN | III |
| ALBENDAZOLE TABLETS 400MG | 17,000.00 | 0.18% | 95.26% | C | V | CV | I |
| DICLOFENAC SODIUM TABLETS - 50MG | 16,560.00 | 0.17% | 95.43% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| DIGOXIN TABLETS - 0.25MG | 16,100.00 | 0.17% | 95.60% | C | N | CN | III |
| ETHANOL (DENATURED) - 70% | 16,000.00 | 0.17% | 95.77% | C | N | CN | III |
| PANCURONIUM INJECTION - 4MG/2ML | 16,000.00 | 0.17% | 95.94% | C | N | CN | III |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 15,000.00 | 0.16% | 96.10% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 14,400.00 | 0.15% | 96.25% | C | E | CE | II |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 14,400.00 | 0.15% | 96.40% | C | N | CN | III |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 14,040.00 | 0.15% | 96.55% | C | N | CN | III |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 13,200.00 | 0.14% | 96.69% | C | V | CV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 13,000.00 | 0.14% | 96.83% | C | N | CN | III |
| NYSTATIN SUSPENSION - 100 000IU/ML | 12,900.00 | 0.14% | 96.96% | C | V | CV | I |
| GENTAMICIN INJECTION - 20MG- 10MG/ML 2ML AMP | 12,600.00 | 0.13% | 97.10% | C | V | CV | I |
| PHENYTOIN SODIUM TABLETS - 50MG | 12,250.00 | 0.13% | 97.22% | C | V | CV | I |
| INSULIN SOLUBLE - 100IU/ML | 12,000.00 | 0.13% | 97.35% | C | N | CN | III |
| CHLORAMPHENICAL INJECTION - 1GM | 11,400.00 | 0.12% | 97.47% | C | V | CV | I |
| CALAMINE LOTION - 15% | 11,250.00 | 0.12% | 97.59% | C | N | CN | III |
| GLIBENCLAMIDE TABLETS - 5MG | 11,200.00 | 0.12% | 97.71% | C | N | CN | III |
| HYDROCORTISONE OINTMENT - 1% | 10,800.00 | 0.11% | 97.82% | C | N | CN | III |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 10,000.00 | 0.11% | 97.93% | C | N | CN | III |
| KETAMINE INJECTION - 50MG/ML | 10,000.00 | 0.11% | 98.03% | C | V | CV | I |
| DIGOXIN ELIXIR/ORAL SOLUTION - 50MCG/ML | 9,850.00 | 0.10% | 98.14% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 9,600.00 | 0.10% | 98.24% | C | V | CV | I |
| RETINOL (VITAMIN A)CAPSULES 50000IU | 9,000.00 | 0.09% | 98.33% | C | N | CN | III |
| THIOPENTONE SODIUM INJECTION - 500MG | 8,250.00 | 0.09% | 98.42% | C | V | CV | I |
| AMITRIPTYLINE TABLETS - 25MG | 8,100.00 | 0.09% | 98.50% | C | N | CN | III |
| CEFTRIAXONE INJECTION - 1G – IM WITH DILUENT | 8,000.00 | 0.08% | 98.59% | C | N | CN | III |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 8,000.00 | 0.08% | 98.67% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| SALBUTAMOL TABLETS - 4MG | 7,800.00 | 0.08% | 98.76% | C | N | CN | III |
| FUROSEMIDE INJECTION - 20MG/2ML | 7,350.00 | 0.08% | 98.83% | C | N | CN | III |
| GLUTARALDEHYDE 2% SOLUTION | 7,280.00 | 0.08% | 98.91% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 7,200.00 | 0.08% | 98.99% | C | V | CV | I |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG | 7,050.00 | 0.07% | 99.06% | C | V | CV | I |
| TINIDAZOLE TAB 500MG | 6,500.00 | 0.07% | 99.13% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 6,000.00 | 0.06% | 99.19% | C | V | CV | I |
| GABAPENTIN CAP 300MG | 6,000.00 | 0.06% | 99.25% | C | N | CN | III |
| PARACETAMOL INJECTION 10MG/ML 100ML VIAL | 6,000.00 | 0.06% | 99.32% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 5,400.00 | 0.06% | 99.37% | C | N | CN | III |
| FUROSEMIDE TABLETS - 40MG | 5,250.00 | 0.06% | 99.43% | C | N | CN | III |
| HEPARINE INJECTION - 5000UNITS/ML 5ML | 5,100.00 | 0.05% | 99.48% | C | N | CN | III |
| WATER BASED LUBRICANT (KY JELLY) | 4,950.00 | 0.05% | 99.54% | C | N | CN | III |
| SODIUM BICARBONATE INJECTION - 8.4% | 4,800.00 | 0.05% | 99.59% | C | N | CN | III |
| FLUOXETINE CAPSULES - 20MG | 4,000.00 | 0.04% | 99.63% | C | N | CN | III |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 3,850.00 | 0.04% | 99.67% | C | N | CN | III |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 3,500.00 | 0.04% | 99.71% | C | N | CN | III |
| LEVOTHYROXINE SODIUM 100MCG TAB | 3,450.00 | 0.04% | 99.74% | C | N | CN | III |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 3,400.00 | 0.04% | 99.78% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 3,200.00 | 0.03% | 99.81% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 3,000.00 | 0.03% | 99.84% | C | N | CN | III |
| DILOXANIDE FUROATE TAB 500MG | 2,700.00 | 0.03% | 99.87% | C | V | CN | III |
| LOPERAMIDE CAPSULES - 2MG | 2,500.00 | 0.03% | 99.90% | C | N | CN | III |
| RANITIDINE INJECTION - 50MG/2ML | 2,400.00 | 0.03% | 99.92% | C | N | CN | III |
| CHLORPHENIRAMINE TABLETS - 4MG | 1,798.00 | 0.02% | 99.94% | C | E | CE | II |
| FERROUS SULPHATE TABLETS - 200MG | 1,375.00 | 0.01% | 99.96% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 1,300.00 | 0.01% | 99.97% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| COMPOUND MAGNESIUM TRISILICATE TABLETS | 1,250.00 | 0.01% | 99.98% | C | N | CN | III |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 1,000.00 | 0.01% | 99.99% | C | V | CV | I |
| DIAZEPAM TAB 5MG | 450 | 0.00% | 100.00% | C | V | CV | I |
| SUXAMETHONIUM CHLORIDE INJECTION | 90 | 0.00% | 100.00% | C | N | CN | III |
| | 9491238 | | | | | | |

## Appendix 12: TESO NORTH SCH 2016-2017

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| FLUCLOXACILLIN CAPSULES - 250MG | 375,000.00 | 12.52% | 12.52% | A | V | AV | I |
| OXYTOCIN INJECTION - 5 IU/ML | 300,000.00 | 10.02% | 22.54% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES 500MG | 275,000.00 | 9.18% | 31.73% | A | V | AV | I |
| CEFTRIAXONE INJECTION - 1G | 175,000.00 | 5.84% | 37.57% | A | N | AV | I |
| CIPROFLOXACIN TABLETS - 250MG | 132,000.00 | 4.41% | 41.98% | A | V | AV | I |
| DOXYCYCLINE CAPSULES - 100MG | 129,000.00 | 4.31% | 46.29% | A | V | AV | I |
| MORPHINE POWDER | 125,000.00 | 4.17% | 50.46% | A | N | AV | I |
| GRISEOFULVIN TAB 125MG | 97,500.00 | 3.26% | 53.72% | A | V | AV | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 90,000.00 | 3.01% | 56.72% | A | N | AV | I |
| CARBAMAZEPINE TABLETS 200MG | 75,000.00 | 2.50% | 59.23% | A | V | AV | I |
| AMOXYCILLIN CAPSULES - 250MG | 70,000.00 | 2.34% | 61.56% | A | V | AV | I |
| FLUCLOXACILLIN INJECTION - 250MG | 70,000.00 | 2.34% | 63.90% | A | N | AV | I |
| ORAL REHYDRATION SALTS | 70,000.00 | 2.34% | 66.24% | A | V | AV | I |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 64,800.00 | 2.16% | 68.40% | A | N | AV | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 60,000.00 | 2.00% | 70.41% | B | V | BV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 60,000.00 | 2.00% | 72.41% | B | N | BN | II |
| HYDRALAZINE INJECTION - 20MG/ML | 50,800.00 | 1.70% | 74.11% | B | V | BV | I |
| ANTI-D (RH) INJECTION - 250MCG | 50,000.00 | 1.67% | 75.78% | B | N | BN | II |
| CEFIXIME TABLET 400MG | 50,000.00 | 1.67% | 77.45% | B | V | BV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 50,000.00 | 1.67% | 79.12% | B | V | BV | I |
| IBUPROFEN TABLETS - 200MG | 50,000.00 | 1.67% | 80.79% | B | V | BV | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 41,500.00 | 1.39% | 82.17% | B | N | BN | II |
| PHENOBARBITONE TABLETS - 30MG | 35,000.00 | 1.17% | 83.34% | B | E | BE | II |
| Co-trimoxazole suspension, 240 mg/5ml | 34,000.00 | 1.14% | 84.48% | B | V | BV | I |
| METRONIDAZOLE TABLETS - 200MG | 32,000.00 | 1.07% | 85.55% | B | V | BV | I |
| SODIUM HYPOCHLORITE SOLUTION | 25,500.00 | 0.85% | 86.40% | B | N | BN | II |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 24,000.00 | 0.80% | 87.20% | B | N | BN | II |
| DICLOFENAC SODIUM TABLETS - 50MG | 22,080.00 | 0.74% | 87.94% | B | N | BN | II |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 21,600.00 | 0.72% | 88.66% | B | N | BN | II |
| NIFEDIPINE TABLETS - 20MG | 21,600.00 | 0.72% | 89.38% | B | N | BN | II |
| Cotrimoxazole 480mg Tabs | 19,300.00 | 0.64% | 90.02% | B | V | BV | II |
| DOMPERIDONE 10MG TABLETS | 19,000.00 | 0.63% | 90.66% | B | N | BN | II |
| GLIBENCLAMIDE TABLETS - 5MG | 17,500.00 | 0.58% | 91.24% | C | V | CV | I |
| CLOTRIMAZOLE CREAM - 1% | 17,000.00 | 0.57% | 91.81% | C | E | CE | II |
| AMLODIPINE TABLET 5MG | 15,000.00 | 0.50% | 92.31% | C | V | CV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 13,000.00 | 0.43% | 92.75% | C | N | CN | III |
| DEXTROSE - 5% | 10,000.00 | 0.33% | 93.08% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 10,000.00 | 0.33% | 93.41% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 9,400.00 | 0.31% | 93.73% | C | N | CN | III |
| GENTAMICIN INJECTION - 80MG- 40MG/ML 2ML AMP | 9,000.00 | 0.30% | 94.03% | C | V | CV | I |
| POVIDONE-IODINE SOLUTION - 10% | 8,700.00 | 0.29% | 94.32% | C | N | CN | III |
| AZITHROMYCIN 500MG | 8,000.00 | 0.27% | 94.59% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 8,000.00 | 0.27% | 94.85% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 8,000.00 | 0.27% | 95.12% | C | N | CN | III |
| PANCURONIUM INJECTION - 4MG/2ML | 8,000.00 | 0.27% | 95.39% | C | N | CN | III |
| DIHYDROCODEINE PHOSPHATE TAB 30MG | 7,700.00 | 0.26% | 95.64% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 7,200.00 | 0.24% | 95.88% | C | E | CE | II |
| METHYLDOPA TABLETS - 250MG | 7,100.00 | 0.24% | 96.12% | C | N | CN | III |
| ATENOLOL TABLETS - 50MG | 6,600.00 | 0.22% | 96.34% | C | V | CV | I |
| HALOPERIDOL TABLETS - 5MG | 6,275.00 | 0.21% | 96.55% | C | V | CV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 6,250.00 | 0.21% | 96.76% | C | N | CN | III |
| BENZHEXOL TABLETS - 5MG | 6,100.00 | 0.20% | 96.96% | C | N | CN | III |
| BENZYLBENZOATE EMULSION - 25% APPLICATION | 6,000.00 | 0.20% | 97.16% | C | N | CN | III |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 6,000.00 | 0.20% | 97.36% | C | N | CN | III |
| HYDROCORTISONE INJECTION - 100MG | 5,800.00 | 0.19% | 97.56% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 5,600.00 | 0.19% | 97.75% | C | E | CE | II |
| FERROUS SULPHATE TABLETS - 200MG | 5,500.00 | 0.18% | 97.93% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 5,250.00 | 0.18% | 98.10% | C | N | CN | III |
| KETAMINE INJECTION - 50MG/ML | 5,000.00 | 0.17% | 98.27% | C | V | CV | I |
| CHLORPROMAZINE TABLETS - 100MG | 4,925.00 | 0.16% | 98.44% | C | V | CV | I |
| DEXTROSE - 10% | 4,896.00 | 0.16% | 98.60% | C | N | CN | III |
| SUXAMETHONIUM CHLORIDE INJECTION | 4,500.00 | 0.15% | 98.75% | C | V | CV | I |
| FLUPHENAZINE INJECTION - 25MG/ML | 4,300.00 | 0.14% | 98.89% | C | N | CN | III |
| FLUOXETINE CAPSULES - 20MG | 4,000.00 | 0.13% | 99.03% | C | E | CE | II |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 3,400.00 | 0.11% | 99.14% | C | V | CV | I |
| THIOPENTONE SODIUM INJECTION - 500MG | 3,300.00 | 0.11% | 99.25% | C | N | CN | III |
| ENALAPRIL TABLETS - 5MG | 3,250.00 | 0.11% | 99.36% | C | V | CV | I |
| MAGNESIUM SULPHATE INJ 4%, W/V,100ML BOTTLE | 2,900.00 | 0.10% | 99.46% | C | N | CN | III |
| FOLIC ACID TABLETS - 5MG | 2,750.00 | 0.09% | 99.55% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 2,500.00 | 0.08% | 99.63% | C | N | CN | III |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 2,000.00 | 0.07% | 99.70% | C | V | CV | I |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 2,000.00 | 0.07% | 99.76% | C | V | CV | I |

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|---|---|---|---|---|---|---|---|
| CHLORAMPHENICAL INJECTION - 1GM | 1,900.00 | 0.06% | 99.83% | C | N | CN | III |
| DEXAMETHASONE INJECTION - 4MG/ML | 1,800.00 | 0.06% | 99.89% | C | V | CV | I |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 1,200.00 | 0.04% | 99.93% | C | V | CV | I |
| CHLORPHENIRAMINE TABLETS - 4MG | 620 | 0.02% | 99.95% | C | E | CE | II |
| BISACODYL 5MG TABLETS | 500 | 0.02% | 99.97% | C | E | CE | II |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 450 | 0.02% | 99.98% | C | V | CV | I |
| DIAZEPAM TAB 5MG | 450 | 0.02% | 100.00% | C | V | CV | I |
| ATROPINE INJECTION - 1MG/ML | 100 | 0.00% | 100.00% | C | V | CV | I |
| CALAMINE LOTION - 15% | 25 | 0.00% | 100.00% | C | E | CE | II |
| | 2994421 | | | | | | |

## Appendix 13: TESO SOUTH SCH 2015-2016

| Item Name | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|
| ORAL REHYDRATION SALTS | 801,500.00 | 8.10% | 8.10% | A | N | AN | I |
| SODIUM CHLORIDE /NORMAL SALINE SOLUTION - 0.9% | 472,000.00 | 4.77% | 12.87% | A | N | AN | I |
| HYDROCORTISONE OINTMENT - 1% | 468,000.00 | 4.73% | 17.61% | A | N | AN | I |
| ERYTHROMYCIN TABLETS - 250MG | 400,000.00 | 4.04% | 21.65% | A | N | AN | I |
| CEFIXIME TABLET 400MG | 350,000.00 | 3.54% | 25.19% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | 315,000.00 | 3.18% | 28.37% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 300,000.00 | 3.03% | 31.40% | A | V | AV | I |
| FLUCLOXACILLIN CAPSULES 500MG | 275,000.00 | 2.78% | 34.18% | A | V | AV | I |
| OXYTOCIN INJECTION - 5 IU/ML | 268,000.00 | 2.71% | 36.89% | A | V | AV | I |
| AMOXICILLIN/CLAVULANIC ACID ORAL SUSPENSION 312.5MG/5ML | 266,500.00 | 2.69% | 39.59% | A | V | AV | I |
| SODIUM HYPOCHLORITE SOLUTION | 244,800.00 | 2.47% | 42.06% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 238,000.00 | 2.41% | 44.47% | A | N | AN | I |

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|---|---|---|---|---|---|---|---|
| DEXTROSE - 5% | 208,000.00 | 2.10% | 46.57% | A | V | AV | I |
| SNAKE VENOM ANTISERUM(AFRICAN) I.V INJECTION(POLYVALENT) 10ML AMPOULE | 202,500.00 | 2.05% | 48.62% | A | E | AE | I |
| AMOXYCILLIN SUSPENSION (PFR ) - 125MG/5ML | 201,000.00 | 2.03% | 50.65% | A | N | AN | I |
| ANTI-D (RH) INJECTION - 250MCG | 200,000.00 | 2.02% | 52.67% | A | N | AN | I |
| HYDROCORTISONE INJECTION - 100MG | 162,400.00 | 1.64% | 54.31% | A | N | AN | I |
| FLUCLOXACILLIN INJECTION - 250MG | 157,500.00 | 1.59% | 55.91% | A | N | AN | I |
| RABBIES VACCINE,PURIFIED VEROCELL/HUMAN DIPLOID, | 145,350.00 | 1.47% | 57.37% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 250MG | 144,000.00 | 1.46% | 58.83% | A | N | AN | I |
| SODIUM LACTATE SOLUTION | 144,000.00 | 1.46% | 60.29% | A | N | AN | I |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 140,000.00 | 1.42% | 61.70% | A | N | AN | I |
| AMOXYCILLIN / CLAVULANIC ACID TABLETS - 625MG | 132,000.00 | 1.33% | 63.04% | A | V | AV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 125,000.00 | 1.26% | 64.30% | B | N | BN | II |
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG(MARCAINE HEAVY) | 120,000.00 | 1.21% | 65.51% | B | V | BV | I |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 120,000.00 | 1.21% | 66.73% | B | N | BN | II |
| CEFUROXIME 250MG TABS | 117,000.00 | 1.18% | 67.91% | B | N | BN | II |
| MAGNESIUM SULPHATE INJ 4%, W/V,100ML BOTTLE | 116,000.00 | 1.17% | 69.08% | B | N | BN | II |
| METRONIDAZOLE INJECTION - 5MG/ML | 112,500.00 | 1.14% | 70.22% | B | N | BN | II |
| PREDNISOLONE TABLETS - 5MG | 110,400.00 | 1.12% | 71.33% | B | N | BN | II |
| METFORMINE TABLETS - 500MG | 108,800.00 | 1.10% | 72.43% | B | V | BV | I |
| INSULIN BIPHASIC 30/70 - 100IU/ML | 105,000.00 | 1.06% | 73.50% | B | V | BV | I |
| DICLOFENAC INJECTION - 75MG | 102,000.00 | 1.03% | 74.53% | B | V | BV | I |

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|---|---|---|---|---|---|---|---|
| ETHANOL (DENATURED) - 70% | 96,000.00 | 0.97% | 75.50% | B | N | BN | II |
| ETHANOL (DENATURED) - 94% | 85,000.00 | 0.86% | 76.36% | B | N | BN | II |
| IBUPROFEN TABLETS - 200MG | 85,000.00 | 0.86% | 77.22% | B | N | BN | II |
| METRONIDOZOLE SUSPENSION - 200MG/5ML | 80,000.00 | 0.81% | 78.02% | B | V | BV | I |
| DEXTROSE - 10% | 75,888.00 | 0.77% | 78.79% | B | N | BN | II |
| VALACYCLOVIR TAB. 500MG | 74,100.00 | 0.75% | 79.54% | B | N | BN | II |
| WATER FOR INJECTION | 74,000.00 | 0.75% | 80.29% | B | N | BN | II |
| PARACETAMOL TABLETS - 500MG | 71,250.00 | 0.72% | 81.01% | B | V | BV | I |
| Acyclovir 400mg Tabs | 70,000.00 | 0.71% | 81.72% | B | N | BN | II |
| PENICILLIN BENZYL INJECTION - 5MU | 67,200.00 | 0.68% | 82.40% | B | N | BN | II |
| PARACETAMOL SUPPOSITORIES 125MG | 65,000.00 | 0.66% | 83.05% | B | V | BV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 63,500.00 | 0.64% | 83.70% | B | V | BV | I |
| AMLODIPINE TABLET 5MG | 60,000.00 | 0.61% | 84.30% | B | V | BV | I |
| HYOSCINE BUTYL BROMIDE INJECTION 20MG/ML | 60,000.00 | 0.61% | 84.91% | B | N | BN | II |
| Co-trimoxazole suspension, 240 mg/5ml | 59,500.00 | 0.60% | 85.51% | B | N | BN | II |
| PHYTOMENADIONE INJECTION (VIT K1) - 2MG/0.2ML AMPOULE | 58,240.00 | 0.59% | 86.10% | B | N | BN | II |
| GENTAMICIN INJECTION - 80MG-40MG/ML 2ML AMP | 55,800.00 | 0.56% | 86.66% | B | N | BN | II |
| ALBENDAZOLE TABLETS 400MG | 52,000.00 | 0.53% | 87.19% | B | N | BN | II |
| AZITHROMYCIN 500MG | 52,000.00 | 0.53% | 87.71% | B | V | BV | I |
| CIPROFLOXACIN TABLETS - 250MG | 49,500.00 | 0.50% | 88.21% | B | E | BE | II |
| FERROUS SULP/FOLIC 200MG/400MCG ACID TAB | 48,000.00 | 0.49% | 88.70% | B | V | BV | I |
| POVIDONE-IODINE SOLUTION - 10% | 46,400.00 | 0.47% | 89.17% | B | N | BN | II |
| NYSTATIN SUSPENSION - 100 000IU/ML | 43,000.00 | 0.43% | 89.60% | B | N | BN | II |
| GLUCOSE INJECTION 50% 50ML (DEXTROSE) | 39,000.00 | 0.39% | 90.00% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| OMEPRAZOLE CAPSULES - 20MG | 36,000.00 | 0.36% | 90.36% | C | N | CN | III |
| OXYTOCIN INJECTION - 10 IU/ML | 36,000.00 | 0.36% | 90.73% | C | N | CN | III |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 32,400.00 | 0.33% | 91.05% | C | N | CN | III |
| METRONIDAZOLE TABLETS - 200MG | 32,000.00 | 0.32% | 91.38% | C | N | CN | III |
| SILVER SULPHADIAZINE CREAM - 1% | 30,000.00 | 0.30% | 91.68% | C | N | CN | III |
| GRISEOFULVIN TAB 125MG | 29,250.00 | 0.30% | 91.98% | C | N | CN | III |
| ANTI-RABIES SERUM INJ - 200 1U/ML | 28,980.00 | 0.29% | 92.27% | C | V | CV | I |
| ALCOHOL BASED HAND RUB | 28,800.00 | 0.29% | 92.56% | C | V | CV | I |
| LIGNOCAINE HYDROCHLORIDE INJ. 1% | 28,000.00 | 0.28% | 92.84% | C | N | CN | III |
| NIFEDIPINE TABLETS - 20MG | 25,200.00 | 0.25% | 93.10% | C | V | CV | I |
| METHYLDOPA TABLETS - 250MG | 24,850.00 | 0.25% | 93.35% | C | V | CV | I |
| Cotrimoxazole 480mg Tabs | 24,125.00 | 0.24% | 93.59% | C | V | CV | I |
| MAGNESIUM SULPHATE INJECTION - 50% | 24,000.00 | 0.24% | 93.84% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 22,100.00 | 0.22% | 94.06% | C | N | CN | III |
| PENICILLIN BENZYL INJECTION - 1MU | 21,000.00 | 0.21% | 94.27% | C | N | CN | III |
| SALBUTAMOL INHALER - 100MCG/ACTUATION | 21,000.00 | 0.21% | 94.48% | C | E | CE | II |
| PHENOBARBITONE INJECTION - 200MG/ML | 20,750.00 | 0.21% | 94.69% | C | N | CN | III |
| DOXYCYCLINE CAPSULES - 100MG | 20,640.00 | 0.21% | 94.90% | C | V | CV | I |
| HEPARINE INJECTION - 5000UNITS/ML 5ML | 20,400.00 | 0.21% | 95.11% | C | N | CN | III |
| CLOTRIMAZOLE PESSARIES 3S- 200GM | 19,800.00 | 0.20% | 95.31% | C | N | CN | III |
| WATER BASED LUBRICANT (KY JELLY) | 19,800.00 | 0.20% | 95.51% | C | N | CN | III |
| CHLORPROMAZINE TABLETS - 100MG | 19,700.00 | 0.20% | 95.71% | C | E | CE | II |
| DICLOFENAC SODIUM TABLETS - 50MG | 19,320.00 | 0.20% | 95.90% | C | V | CV | I |
| ETORICOXIB 60MG TABLETS | 18,975.00 | 0.19% | 96.09% | C | V | CV | I |
| ACETYLSALICYLIC ACID TAB 75MG, ENTERIC COATED | 16,800.00 | 0.17% | 96.26% | C | N | CN | III |

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|---|---|---|---|---|---|---|---|
| BUPIVACAINE HYD IN DEXTROSE INJ - 5MG | 16,450.00 | 0.17% | 96.43% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 16,000.00 | 0.16% | 96.59% | C | E | CE | II |
| SALBUTAMOL NEBULIZING SOLUTION - 5MG/ML 10ML | 15,000.00 | 0.15% | 96.74% | C | V | CV | III |
| FUROSEMIDE INJECTION - 20MG/2ML | 14,000.00 | 0.14% | 96.89% | C | V | CV | I |
| GLIBENCLAMIDE TABLETS - 5MG | 14,000.00 | 0.14% | 97.03% | C | N | CN | III |
| METOLAZONE TABLET 5MG | 13,080.00 | 0.13% | 97.16% | C | V | CV | I |
| PHYTOMENADIONE INJECTION (VIT K1) - 10MG/ML AMPUOLE | 13,000.00 | 0.13% | 97.29% | C | N | CN | III |
| PARACETAMOL SUSPENSION - 120MG/5ML | 12,600.00 | 0.13% | 97.42% | C | N | CN | III |
| FLUCONAZOLE CAPSULES - 50MG | 12,000.00 | 0.12% | 97.54% | C | N | CN | III |
| GABAPENTIN CAP 300MG | 12,000.00 | 0.12% | 97.66% | C | N | CN | III |
| DIGOXIN TABLETS - 0.25MG | 11,500.00 | 0.12% | 97.78% | C | N | CN | III |
| MULTIVITAMIN SYRUP | 11,280.00 | 0.11% | 97.89% | C | N | CN | III |
| IBUPROFEN SYRUP 100MG/5ML 60ML | 11,000.00 | 0.11% | 98.00% | C | E | CE | II |
| GLUTARALDEHYDE 2% SOLUTION | 9,100.00 | 0.09% | 98.09% | C | N | CN | III |
| ATROPINE INJECTION - 1MG/ML | 9,000.00 | 0.09% | 98.19% | C | V | CV | I |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 9,000.00 | 0.09% | 98.28% | C | V | CV | I |
| DEXAMETHASONE INJECTION - 4MG/ML | 9,000.00 | 0.09% | 98.37% | C | N | CN | III |
| GENTAMICIN INJECTION - 20MG-10MG/ML 2ML AMP | 9,000.00 | 0.09% | 98.46% | C | V | CV | I |
| VALPROIC ACID(SODIUM VALPROATE) 200MG TABLETS | 8,760.00 | 0.09% | 98.55% | C | N | CN | III |
| METOCLOPRAMIDE INJECTION - 5MG/ML | 8,400.00 | 0.08% | 98.63% | C | N | CN | III |
| FERROUS SULPHATE TABLETS - 200MG | 8,250.00 | 0.08% | 98.71% | C | N | CN | III |
| THIOPENTONE SODIUM INJECTION - 500MG | 8,250.00 | 0.08% | 98.80% | C | V | CV | I |
| FLUPHENAZINE INJECTION - 25MG/ML | 7,740.00 | 0.08% | 98.88% | C | N | CN | III |
| CEFTAZIDIME 1G INJ. | 7,000.00 | 0.07% | 98.95% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 6,800.00 | 0.07% | 99.02% | C | V | CV | I |

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|---|---|---|---|---|---|---|---|
| FLUPENTHIXOL DECANOATE - 20MG/ML | 6,750.00 | 0.07% | 99.08% | C | N | CN | III |
| HALOPERIDOL TABLETS - 5MG | 6,275.00 | 0.06% | 99.15% | C | N | CN | III |
| CHLORPHENIRAMINE TABLETS - 4MG | 6,200.00 | 0.06% | 99.21% | C | V | CV | I |
| BENZHEXOL TABLETS - 5MG | 6,100.00 | 0.06% | 99.27% | C | N | CN | III |
| ADRENALINE INJECTION - 1MG/ML | 6,000.00 | 0.06% | 99.33% | C | V | CV | I |
| CARBAMAZEPINE TABLETS 200MG | 6,000.00 | 0.06% | 99.39% | C | V | CV | I |
| TETRACYCLINE EYE OINTMENT -1% | 5,400.00 | 0.05% | 99.45% | C | V | CV | I |
| FOLIC ACID TABLETS - 5MG | 5,250.00 | 0.05% | 99.50% | C | N | CN | III |
| CALAMINE LOTION - 15% | 5,000.00 | 0.05% | 99.55% | C | N | CN | III |
| ENALAPRIL TABLETS - 5MG | 4,875.00 | 0.05% | 99.60% | C | V | CV | I |
| PHENOBARBITONE TABLETS - 30MG | 4,340.00 | 0.04% | 99.64% | C | V | CV | I |
| AMITRIPTYLINE TABLETS - 25MG | 4,050.00 | 0.04% | 99.69% | C | V | CV | I |
| FLUOXETINE CAPSULES - 20MG | 4,000.00 | 0.04% | 99.73% | C | N | CN | III |
| PANCURONIUM INJECTION - 4MG/2ML | 4,000.00 | 0.04% | 99.77% | C | V | CV | I |
| DIGOXIN ELIXIR/ORAL SOLUTION - 50MCG/ML | 3,940.00 | 0.04% | 99.81% | C | N | CN | III |
| CHLORPHENIRAMINE INJECTION - 10MG/ML | 3,000.00 | 0.03% | 99.84% | C | N | CN | III |
| PHENYTOIN SODIUM TABLETS - 50MG | 2,800.00 | 0.03% | 99.87% | C | N | CN | III |
| SALBUTAMOL TABLETS - 4MG | 2,400.00 | 0.02% | 99.89% | C | N | CN | III |
| KETAMINE INJECTION - 50MG/ML | 2,000.00 | 0.02% | 99.91% | C | N | CN | III |
| AMINOPHYLLINE INJECTION 25MG/ML-10ML | 1,800.00 | 0.02% | 99.93% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 1,600.00 | 0.02% | 99.94% | C | N | CN | III |
| LOPERAMIDE CAPSULES - 2MG | 1,500.00 | 0.02% | 99.96% | C | N | CN | III |
| METOCLOPRAMIDE TABLETS - 10MG | 1,300.00 | 0.01% | 99.97% | C | N | CN | III |
| CHLORPROMAZINE INJECTION - 50MG/2ML | 990 | 0.01% | 99.98% | C | V | CV | I |
| SODIUM BICARBONATE INJECTION - 8.4% | 960 | 0.01% | 99.99% | C | V | CV | I |
| ACETYLSALICYLIC ACID TABLETS - 300MG | 500 | 0.01% | 100.00% | C | V | CV | I |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| INSULIN SOLUBLE - 100IU/ML | 300 | 0.00% | 100.00% | C | N | CN | III |
| | 9892058 | | | | | | |

## Appendix 14: TESO SOUTH SCH 2016-2017

| Item Name | Qty | Value | %Total | %Cumulative | ABC | VEN | ABC-VEN Matrix | ABC-VEN matrix analysis |
|---|---|---|---|---|---|---|---|---|
| OXYTOCIN INJECTION - 5 IU/ML | 460 | 300,000.00 | 27.29 % | 27.29% | A | N | AN | I |
| CEFTRIAXONE INJECTION - 1G | 80 | 105,000.00 | 9.55% | 36.84% | A | V | AV | I |
| CIPROFLOXACIN TABLETS - 250MG | 57 | 94,050.00 | 8.55% | 45.39% | A | V | AV | I |
| ORAL REHYDRATION SALTS | 2,000 | 70,000.00 | 6.37% | 51.76% | A | N | AN | I |
| AMOXYCILLIN CAPSULES - 250MG | 32 | 44,800.00 | 4.07% | 55.83% | A | N | AN | I |
| PHENOBARBITONE INJECTION - 200MG/ML | 100 | 41,500.00 | 3.77% | 59.61% | A | N | AN | I |
| VITAMIN B COMPLEX (B1, B6 AND B12) | 330 | 35,640.00 | 3.24% | 62.85% | A | N | AN | I |
| FLUCLOXACILLIN CAPSULES - 250MG | 14 | 35,000.00 | 3.18% | 66.03% | A | N | AN | I |
| GRISEOFULVIN TAB 125MG | 16 | 31,200.00 | 2.84% | 68.87% | A | V | AV | I |
| HYDRALAZINE INJECTION - 20MG/ML | 40 | 25,400.00 | 2.31% | 71.18% | B | V | BV | I |
| ALBENDAZOLE TABLETS 400MG | 24 | 24,000.00 | 2.18% | 73.37% | B | N | BN | II |
| HYOSCINE BUTYLBROMIDE TAB 10MG | 3 | 24,000.00 | 2.18% | 75.55% | B | N | BN | II |
| DOXYCYCLINE CAPSULES - 100MG | 18 | 23,220.00 | 2.11% | 77.66% | B | V | BV | I |
| Co-trimoxazole suspension, 240 mg/5ml | 1,200 | 20,400.00 | 1.86% | 79.52% | B | N | BN | II |
| ERYTHROMYCIN SUSPENSION (PFR) - 125MG/5ML | 400 | 20,000.00 | 1.82% | 81.34% | B | V | BV | I |
| KETAMINE INJECTION - 50MG/ML | 200 | 20,000.00 | 1.82% | 83.15% | B | V | BV | I |
| IBUPROFEN TABLETS - 200MG | 38 | 19,000.00 | 1.73% | 84.88% | B | N | BN | II |
| AZITHROMYCIN 500MG | 450 | 18,000.00 | 1.64% | 86.52% | B | V | BV | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FLUCLOXACILLIN INJECTION - 250MG | 480 | 16,800.00 | 1.53% | 88.05% | B | V | BV | I |
| MORPHINE SULPHATE INJECTION - 10MG/ML | 100 | 12,500.00 | 1.14% | 89.18% | B | E | BE | II |
| DICLOFENAC SODIUM TABLETS - 50MG | 41 | 11,316.00 | 1.03% | 90.21% | B | V | BV | I |
| CEFTAZIDIME 1G INJ. | 3,000 | 11,200.00 | 1.02% | 91.23% | C | N | CN | III |
| BENZYLBENZOATE EMULSION - 25% APPLICATION | 2,000 | 10,500.00 | 0.96% | 92.19% | C | N | CN | III |
| DICLOFENAC INJECTION - 75MG | 2,000 | 10,000.00 | 0.91% | 93.10% | C | V | CV | I |
| POVIDONE-IODINE SOLUTION - 10% | 30 | 8,700.00 | 0.79% | 93.89% | C | N | CN | III |
| CLOTRIMAZOLE CREAM - 1% | 3,000 | 7,820.00 | 0.71% | 94.60% | C | N | CN | III |
| CARBAMAZEPINE TABLETS 200MG | 5 | 7,500.00 | 0.68% | 95.28% | C | V | CV | I |
| Cotrimoxazole 480mg Tabs | 7 | 6,755.00 | 0.61% | 95.90% | C | N | CN | III |
| PHENOBARBITONE TABLETS - 30MG | 96 | 6,720.00 | 0.61% | 96.51% | C | N | CN | III |
| MAGNESIUM SULPHATE INJECTION - 50% | 50 | 6,000.00 | 0.55% | 97.05% | C | V | CV | I |
| HYDROCHLOROTHIAZIDE TABLETS - 50MG | 13 | 5,200.00 | 0.47% | 97.53% | C | N | CN | III |
| KETOCONAZOLE TABLETS - 200MG | 55 | 4,400.00 | 0.40% | 97.93% | C | V | CV | I |
| PANCURONIUM INJECTION - 4MG/2ML | 50 | 4,000.00 | 0.36% | 98.29% | C | V | CV | I |
| RANITIDINE INJECTION - 50MG/2ML | 500 | 4,000.00 | 0.36% | 98.65% | C | V | CV | I |
| DEXAMETHASONE INJECTION - 4MG/ML | 400 | 3,600.00 | 0.33% | 98.98% | C | V | CV | I |
| GENTAMYCIN SULPHATE SOLUTION (EYE / EAR DROPS) 0.3 % W/V | 200 | 3,400.00 | 0.31% | 99.29% | C | N | CN | III |
| SUXAMETHONIUM CHLORIDE INJECTION | 50 | 2,250.00 | 0.20% | 99.50% | C | V | CV | I |
| AMINOPHYLLINE INJECTION 25MG/ML- 10ML | 150 | 1,800.00 | 0.16% | 99.66% | C | V | CV | I |

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|---|---|---|---|---|---|---|---|---|
| DOMPERIDONE 10MG TABLETS | 8 | 1,520.00 | 0.14% | 99.80% | C | N | CN | III |
| CHLORPHENIRAMINE SYRUP - 2MG/5ML | 8 | 1,440.00 | 0.13% | 99.93% | C | V | CV | I |
| NEOSTIGMINE INJECTION - 2.5MG/ML | 10 | 400 | 0.04% | 99.97% | C | E | CE | II |
| CHLORAMPHENICAL INJECTION - 1GM | 10 | 380 | 0.03% | 100.00% | C | V | CV | I |
| WATER FOR INJECTION | 1 | 4 | 0.00% | 100.00% | C | N | CN | III |
| | 17726 | 1099415 | | | | | | |