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Regional Centre of Excellence for
Vaccines, Immunisation and Health
Supply Chain Management
(RCE-VIHSCM)

**UNIVERSITY OF RWANDA
COLLEGE OF MEDICINE AND
HEALTH SCIENCES**

**EAST AFRICAN COMMUNITY REGIONAL CENTER OF EXCELLENCE
FOR VACCINES IMMUNIZATION AND HEALTH SUPPLY CHAIN
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(EAC RCE VIHSCM)

MASTERS OF SCIENCES IN HEALTH SUPPLY CHAIN MANAGEMENT

**TITLE: PHARMACEUTICAL INVENTORY MANAGEMENT BASED ON
ABC-VEN ANALYSIS: CASE STUDY OF RWANDA MEDICAL SUPPLY
LTD (RMS Ltd), NYAMAGABE BRANCH.**

**Dissertation submitted for the partial fulfillment of the requirements for the award of a
master's degree in health supply chain management to the School of Public Health, College
of Medicine and Health Sciences, University of Rwanda.**

by

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Kigali, April 2022

DECLARATION

I, MFIZI Ephrem, declare that this dissertation is the result of my work except where specifically acknowledged. It has not been submitted for any other degree at the University of Rwanda or any other institution. This dissertation has been passed through the anti-plagiarism system and found compliant; this is the approved final document.

Name: MFIZI Ephrem

Signature:



Authority to submit this dissertation

In my capacity as a supervisor, I, Dr. Marie Francoise Mukanyangezi, do authorize the student to submit this dissertation entitled “Pharmaceutical inventory management based on ABC-VEN analysis: Case study of Rwanda medical supply Ltd, Nyamagabe Branch”.

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Signature:



Date: 11-04-2022

DEDICATION

This work is dedicated to:

My beloved wife, Annonciata

My precious daughters Adenora and Enora

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MFIZI Ephrem

ABSTRACT

Background

Inventory control of health commodities must be handled carefully to ensure an uninterrupted health supply chain and minimize wastage in the given institutions, especially in health facilities. Therefore, this study was proposed to analyze health commodities expenditure and identify products that require close follow-up in health facilities. The study assessed inventory control of the products managed at the District warehouse and distributed to the district-based health facilities.

Methodology

We conducted this study at Rwanda Medical Supply Ltd, Nyamagabe Branch, for products distributed in the health facilities of the Nyamagabe District catchment area for three years, from the financial year 2017-2018 to 2019-2020. First, we considered distribution data for essential generic medicines invoiced to the health facilities for the ABC analysis. Then, VEN analysis was performed to identify vital products with a high value requiring more attention. Then, products were arranged according to the descending order of importance, and we performed a breakdown of products according to the Paletto Principle.

Results

In the ABC-VEN analysis for the total number of 457 essential generic medicines, 76 products, representing 19.84% of all products, had 74.91% of the total cost of all products. These products were classified in Group A. In Group B, 116 products correspond to 30.29% of all products with 20% of the total cost, while in Group C, 191 products represent 49.87% of all products with a total cost of only 5.09%.

In VEN analysis, 202 products representing 44.20 % were classified as vital products, 231 were classified as essential medicines and represented 50.54 %, while 24 products representing 75.26 % were classified as non-essential. Vital products represent 38.20% of the total cost, essential products 59.17%, and non-essential products 2.63%.

In ABC-VEN analysis, we found that Class I represents 55.80 % of all medicines that cost 87.88% of all total cost. Class II represents 40.70% of all medicines representing 11.82% of the total cost, and Class III represents 3.50 % of all commodities that account for 0.3% of all total cost.

Conclusion

Inventory management techniques are essential to analyze pharmaceutical expenditure and improve procurement planning and budgeting to optimize resource use. This study contributed to the categorization of medicines expenditure at RMS Ltd Nyamagabe Branch using ABC-VEN analysis. According to ABC-VEN analysis, it was recommended that health supply chain managers focus more on the supervision of products in category I. Hence, health facilities managers should adopt inventory techniques using ABC/VEN analysis for resources optimization.

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LIST OF SYMBOLS AND ABBREVIATIONS/ACRONYMS

ABC	Always Better Control
FSN	Fast-moving, Slow-moving, and Non-moving
GDP	Global Domestic Product
HSSP	Health Sector Strategic Plan
MCH	Maternal Child Health
MoH	Ministry of health
NCDs	Non-Communicable Diseases
RDB	Rwanda Development Board
RMS Ltd	Rwanda Medical Supply Limited
RWF	Rwandan Francs
SDE	Scarce, Difficult, and Easy to obtain
SDGs	Sustainable Development Goals
THE	Total Health Expenditure
USD	United States Dollar
VEN	Vital, Essential, and Nonessential
WHO	World Health Organization

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I. INTRODUCTION

1.1. Background

Effective supply management can contribute to the reliable availability of essential medicines, which is necessary for the provision of high-quality health services. As drugs are expensive and mismanagement often leads to wastage, good supply management is vital for cost-effective treatment (1).

Inventory management consists of stock monitoring to reduce stock costs by avoiding stock losses and shortages. Avoiding failures and insufficiencies may conflict in one way or another. For example, if a supply chain manager wishes to avoid stockout, it will be required to keep a high inventory level that can lead to increased space requirements, high management costs, and risk of losses. On the other hand, when a health manager wishes to keep an inventory cost at a lower level in healthcare services, it may cause stockout at the facility level with risks of delay for healthcare services and death sometimes (2).

Several countries, especially low and middle-income countries, are improving their health systems to strengthen universal health coverage. Health commodities occupy an essential place in universal health coverage, and they are taken into account to ensure their availability and affordability (2). Hence, drug use and expenditure analysis must help universal access to drugs. The World Health Organization (WHO) supports assessing medicines use for decision-making on formularies updates (3). This analysis would provide information on the budget spent on medicines, a particular group of drugs, and direct policymakers and managers to plan the required funding for drugs and their allocation (3). Given that medicines are costly and occupy a considerable percentage of the total expenditure, a close follow-up on pharmaceutical management would improve available resources.

Expenditure on medicines depends on two main factors, namely the price and the quantity of medicines purchased. The "World Pharmaceutical Report" shows that pharmaceutical spending in some countries worldwide has changed more than total health expenditure (THE) and gross domestic product (GDP)(5). Therefore, health service managers need strategies to be realistic about the pharmaceutical price (4).

The third edition of the WHO Drug Situation Report 2011 recommended that countries increase their efforts to measure and monitor the prices and availability of medicines to respond to observed changes in the cost of drugs. These efforts would improve procurement, reduce drug prices by

eliminating tariffs and taxes on pharmaceuticals, and promote high-quality generic medicines. In addition, profit margins should be regulated to avoid high additional costs (5).

One of the methods used to measure and monitor medicine prices is an inventory analysis considering expenditures on health commodities. ABC analysis enables efficient management of pharmaceuticals, especially in hospitals and healthcare supply chain facilities, helps compare the cost of managed items, and may optimize services by predicting inventory level, ordering, and buying cost.

To achieve the Sustainable Development Goals (SDGs), especially the third goal, which focuses on good health, spending on medicines, especially drugs, should be increased. Optimal medicines management helps to ensure that essential medicines are available at an affordable cost. Reliable data would therefore contribute to an uninterrupted healthcare supply chain by planning and estimating the goods needed and the total charges in a given period. Within this regard, an analysis of medicines' cost and proper management has to be considered.

In a study conducted by Mani in India in 2015-2016, it was found that in an ABC analysis of 414 medicines, 27.7% of all items were products that accounted for 70% of the cumulative cost of the category 'A'. Products corresponding to 20% of the incremental cost of category 'B' accounted for 22.9% of all products. Products with 10% of the cumulative price were assigned to category 'C' accounted for 53.4% of all products (6).

In a study conducted in Russia to analyze the inventory of the trading company Karandash LLC in 2020, the application of ABC and XYZ analysis showed that 95.74% of all items were allocated to product groups A and B, while 4.26% of items were assigned to group C (9).

In a study of drug expenditure at Goa Medical College Hospital in India, it was found that the hospital's drug list comprised 348 drugs in the financial year 2005-06 and that 12.93% of Group A drugs accounted for almost 70% of the drug budget as per ABC analysis. In comparison, Group C drugs (67.53%) represent 10% of the expenditure (7).

In Africa, studies were conducted in South Sudan, Ethiopia, and Kenya on the inventory control and expenditure of medicines in health facilities and in the supply chain, which provided information on the classification of medicines according to ABC-VEN and helped to improve drug supply and resource management (8–10).

In Rwanda, works on the availability of health commodities show a gap in the availability of essential medicines (11–13).

One study discussed medicines availability in Rwanda and affordability, but it didn't mention inventory turnover-related activity. According to Bizimana, the availability of medicines was lower in public institutions and faith-based ones than in private institutions (14).

Within this regard, a study on inventory control was proposed to contribute to essential data that would be used to mitigate a stockout problem by improving the supply chain management system and optimization of resources.

1.2.Problem statement

Procurement of medicines involves selecting high-quality products and knowing the correct quantity, time of order, price, and qualified suppliers. Purchasing and inventory control are essential and interrelated tasks in the procurement process. Stocks resulting from

Rising drug costs are a problem for health systems worldwide, with the situation being even more worrying in developing countries due to scarce financial resources. Unfortunately, the cost of medicines in the Rwandan health supply chain system is rarely reported and passed on, as products are purchased from a variety of sources, including the central government pharmaceutical warehouse and private wholesale pharmacies.

Classification of medicines according to their criticality, cost burden, and combination is crucial for inventory decisions and resource optimization (15,16).

ABC ranks items based on demand, cost, and risk data, and warehouse managers divide items into classes based on these criteria. In health supply chain management, it helps supply chain managers to understand which products or services are most important to the financial implication of the whole system(15).

Thus, ABC analysis only does not identify prioritization in managing inventories, especially in health supply chain management, and it has to be coupled with other methods (6,8,15,17).

Even ABC analysis is vital in managing inventory; it is crucial to associate it with other studies to consider other factors, and then most used is ABC-VEN analysis(18). In health supply chain management, the VEN classification highlights the role of health commodities by their public health value (19).

The analysis of drug expenditure impacts stock management, especially on the type of drugs to be ordered, and it thus has a direct impact on the quality of services provided. It also affects the management of financial resources, especially cash flow planning (20).

In the literature review, we did not identify any study in Rwanda conducted on ABC-VEN analysis. Thus, the studies conducted in different countries, including regions, were essential to improve health supply chain management within health facilities. There is no standard recommended inventory management to monitor medicines expenditure in health facilities. Applying the ABC-VEN method, an excellent strategy to optimize medicines resources use, is not officially applied in medicines management in Rwanda. This study aimed to evaluate medicines expenditure at RMS Ltd Nyamagabe to identify areas to improve efficiency resources and avail essential medicines.

1.3. Objectives

Main objective:

This study aimed to analyze inventory management of health commodities based on ABC-VEN analysis at Rwanda Medical Supply Ltd, Nyamagabe Branch.

Specific objectives

1. To establish the list of medicines managed at RMS Ltd Nyamagabe Branch in the period of study
2. Categorize medicines based on ABC classification at Rwanda Medical Supply Ltd, Nyamagabe Branch
3. To Categorise medicines based on the VEN analysis according to their public health priorities
4. To determine products that require more stock monitoring using ABC-VEN analysis.

1.4. Research questions

The stated objectives have been set to answer the following questions;

1. What are medicines that are managed at RMS Ltd Nyamagabe Branch?
2. What proportion of pharmaceuticals and their categories require higher supervisory monitoring based on their value?
3. What proportion of medicines and their categories are based on their public health importance?

4. Which medicines require high inventory control based on their importance and cost?

1.5. Significance of the study

The results of this study will be used to guide health supply chain managers on improving the inventory management system. It would also provide an overview of how funds are spent on the procurement of medicines so that the strategic objectives of good procurement of medicines in the Rwandan health supply chain system are achieved. In addition, the results of this study would help provide knowledge on the categorization and identification of medicines that consume a large portion of the budget and therefore require special attention in inventory management.

The study results will also help suggest improvements in the procurement and management of medicines regarding purchasing value and importance. Medicines supply chain data and prioritization can also support decision-making and predict the likely budget impact of a new item on a reimbursement list or prescription schedule. Observations can be used to review the inclusion of drugs on the national formulary or to determine the impact of a policy or regulatory change.

1.6. Subdivision of the dissertation

The primary purpose of the first chapter is to introduce the study, the problem statement, the objectives, and the research questions. The second chapter reviews the literature on health commodity supply chain management studies focusing on inventory management. The third chapter describes the methods and materials used for this research; chapter four includes results, chapter five discussion, and chapter six conclusion and recommendations.

2. LITERATURE REVIEW

2.1.Operational definitions of key terms relevant to the study

2.1.1. Inventory management

Inventory management is a system or method used to control inventory transactions (20).

2.1.2. Supply chain of health commodities

Supply chain management is the active management of commodity-related tasks within organizations and at different levels of the health system to ensure that the availability of commodities supports the overall objectives of the health system. Supply chain activities include many functions, such as quantification, procurement, storage, and transportation (21).

2.2.Inventory management technics

2.1.1 General overview of inventory management

Inventory management is the core activity of pharmaceutical management that other pharmaceutical management activities depend on. Poor stock management can lead to wasted financial resources, shortages, or overstocking certain health products, leading to expiries. Inadequate inventory management turns out to be subjective and is characterized by decisions on order frequency, quantity, stock accounts, and an inadequate performance monitoring system (22)

The main reason for stockholding in the pharmaceutical supply system is to ensure an uninterrupted supply system. The choice of products to be stored should be based on their health significance and consumption trends. ABC and VEN analyses are valuable tools to define the items on the medicines list to be kept in stock (22).

Good inventory management helps achieve a reasonable balance between purchase costs, storage costs, costs of scarcity, and other related expenses.

Stocks can be classified using different methods to optimize the efficiency of storage operations and the cost of investment. Commonly described inventory management techniques include ABC (always, best and control), VEN (vital, essential and non-essential), FNS (fast, normal and slow), XYZ (based on the value of goods in stock), SDE (scarce, difficult and easily obtainable) and HML (high, medium and low unit price of material) (16,23).

2.3.Inventory management types

2.3.1. **Inventory management methods ABC**

Inventory management based on ABC classifies medicines according to their importance to costs; this allows products that consume a large budget to be considered in planning.

ABC inventory analysis is a classification of items in descending order according to their value to the business. Group A contributes the most to the business' value, while items in group C represent the most negligible value(23,24).

2.3.2. **VEN Analysis**

The VEN system categorizes medicines according to their relative public health value and divides them into Vital (V), essential (E), and non-essential (N) medicines.

V: Vital medicines are life-saving products with significant withdrawal side effects, crucial to provide primary health services

E: Essential medicines are used for less severe diseases but are not essential for the provision of primary health services

N: The Category of non-essential medicinal products includes products used for the treatment of minor or self-limited diseases or which have comparatively higher costs than therapeutic benefits(15,23).

2.3.3. **XYZ Analysis**

The classification of goods into groups X, Y, and Z consists of comparing the coefficient of variation calculated according to the formula with the normative values defining the group limits.

- Group X consists of elements with a coefficient of variation of 10-15% or less;
- Group Y consists of elements with a coefficient of variation of 15-25%;
- Group Z consists of elements with a coefficient of variation of more than 25% (22)

2.3.4. **FSN Analysis**

In the analysis of fast, slow, and non-rotating stocks (FSN), the stock positions are divided into three categories: fast-moving, slow-moving, and non-moving or dead stocks.

The FSN classification determines the frequency of each item and classifies them in descending order. Articles issued more than 15 times per year are classified as fast-moving (F); items issued 5-15 times are considered slow-moving (16,23)

2.4. Analysis on medicines expenditure based on ABC-VEN analysis

ABC-VEN analysis is a method for identifying drugs that require the highest attention and strict controls to ensure effective and optimal use of funds and contribute to avoiding medicines shortages. The ABC-VEN matrix is created by cross-tabulating the ABC and VEN analysis(6,25).

The application of ABC-VEN analysis in pharmaceuticals inventory management has several advantages: increasing inventory optimization, providing relevant information for supplier negotiations, controlling high-cost medicines, improving inventory forecasting, strategic resources allocation, and customers satisfaction (3,9,24–26).

Disadvantages of this method require high efforts to put each medicine into categories, and the public health value may differ from one level to another(27).

The ABC-VEN analysis is used, and studies done in different countries reveal relevant information on its contribution to medicines management in supply chain entities and health facilities. The study conducted by Yilmaz in Turkey found that 5.05% (46) of the medicines belonged to group A. 10.11% (92) of the medicines belonged to group B and 84.84% (772) of the medicines belonged to group C. Looking at the percentage of expenditure, group A drugs accounted for 70.08% of the total expenditure, group B drugs accounted for 19.88%, and group C drugs accounted for 10.04% (1)

The ABC-VEN analysis study conducted by Taddele in Ethiopia between 2015 and 2017 showed that 15.14%, 22.47%, and 62.39% of the products were classified as A, B, and C drugs, respectively cost 70.08%, 19.87%, and 10.05% of pharmaceutical expenditure. In the ABC-VEN mapping analysis, 39.91%, 59.17%, and 0.92% of the drugs were classified in groups I, II, and III, respectively, accounting for 80.86%, 18.79%, and 0.35% of pharmaceutical expenditure (22). In the VEN analysis, 31.19%, 67.43%, and 1.38% of the products were classified as vital, essential, and non-essential, respectively, and the hospital spent 45.05%, 52.62%, 2.33% of the pharmaceutical expenditure, respectively.

The study found that category I medicines require strict inventory control. Category II and III medicines also need control by middle and lower levels of management. It was recommended that ABC-VEN techniques be applied to use resources efficiently and avoid wastage and stock-outs in secondary health facilities (28)

According to Abdelmonim, the analysis of medicines procured in Soudan during 2015-2017 shows that 584 items were imported with a total value of €1495510147.2. Of these items, about 79 (14%) consumed 75% of the budget (category A), 100 (17%) items cost 15% (category B), while most 405 (69%) items accounted for only 10% of the total expenditure on medicines (category C) (10)

In the study done in Sudan by analyzing the medicines expenditure by the national health insurance, it was found that (category A) accounts for the large fund, and category B represents moderate usage. In contrast, several items (category C) represent only 9.92% of the total cost (26). According to the study conducted in Kenya by Kitovo, it was found that inventory control was responding to the classification of Paleto; thereby, among 811 products procured, 14% of products count for 80% of the total expenditure in medicines purchases. Category B medicines accounted for 15.9-17% of all medicines procured annually, but 15% of annual spending. In comparison, category C medicines accounted for 70% of all medicines procured, but only 5% of total expenditure (8).

2.5. Pharmaceuticals expenditure in Rwanda and Public Health Supply Chain System Design

The pharmaceutical market in Rwanda is estimated to be USD 75 million in 2014 (comprising originator, branded, and generic medicines). The compound annual growth rate 2007-2014 is estimated at 16%. According to the Rwanda Development Board (RDB), Rwanda imported pharmaceutical products worth USD 45.8 million per year in 2009-2015 (29).

It is remarked that medicines expenditure consumed much money compared to the total budget of the country the reason why it should be attached importance on pharmaceutical expenditure control.

Also, in the Rwanda health sector strategic plan, the government of Rwanda set a target of improving medicines availability at a high level. Reference made to the fourth health sector strategic plan (HSSP IV), availability of medicines at the central medical store was 55%, with the target to reach 80% in 2020 and 90 in 2024 (30).

In Rwanda, a health supply chain system is designed aligned with the health system pyramid. Thereby at the National level, a Central Medical Store has branches in territorial District administrative. However, few studies conducted in the Rwanda supply chain system revealed that

health products are available and affordable in Rwanda at a reasonable cost in public health institutions (14,31).

A study conducted by Mukundiyukuri on the availability of NCDs commodities in 3 rural District areas revealed a problem with medicines available for the given products, 71% for health centers, and 78% for District Hospitals (11). This study demonstrated the viability of NCD drugs supported in a rural area; complimentary studies would support health supply chain management in Rwanda.

A study conducted in Rwanda on antihypertensive drugs revealed the need for regular and effective monitoring of drug stocks and ensuring timely and sufficient replenishment of stocks to avoid supply shortages (13).

A study conducted by Nditunze in Rwanda in 2015 on stock-outs of essential medicines found that a few health centers did not record stock-outs of the tracer medicines studied during the study period. The classification of stock-outs was based on the range of stock-outs recorded between 0.0 and 24.2%. 40 % of the health centers were classified as high, 33.3 % as a medium, and 26.7 % as low or non-existent (12)

A study on the availability of NCDs commodities conducted in Rwandan three rural District shows a stockout problem for NCDs commodities and highlight importance of regular monitoring of health commodities stock (11,13).

Given that medicines are costly and essential for public health, they should be available at a reasonable cost. As long as Rwanda's health supply chain system is concerned, many products are imported externally. Studies showed that a gap exists in the availability at the health facilities level and the central medical store. In this regard, a study on pharmaceuticals expenditures by ABC category was initiated to find where an effort would be put to mitigate a stockout problem and guide supply chain manager for procurement planning, taking into account medicines cost and public health needs.

Conceptual framework

This study ABC-VEN analysis will identify ABC Category, VEN Category and use the ABC-VEN matrix to determine limits for those products. In this conceptual framework, the independent variables are inventory management classification, and the dependent variables are products, volume, and cost. It is called category operationalization.

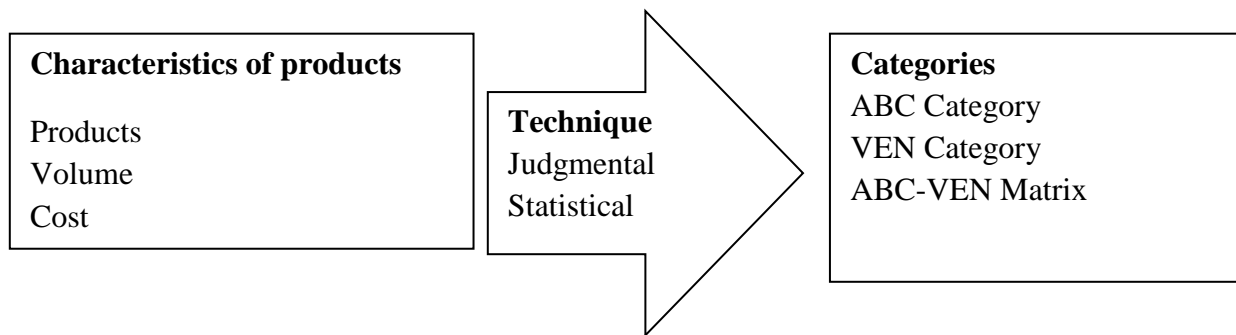


Figure 1: Conceptual framework

2.6.Study area

The study was conducted in Rwanda Medical Supply Ltd, Nyamagabe Branch. The Rwanda medical Supply (RMS) Ltd is an autonomous institution in charge of procurement, availing, and distributing pharmaceuticals primarily to public health facilities. RMS Ltd has the head office and central warehouse in Kigali City, the Capital of Rwanda, and has thirty Branches located in thirty administrative districts. RMS Ltd Nyamagabe Branch serves the Nyamagabe District population. Nyamagabe District is one of the thirty administrative Districts located in the Southern Province with 341,491 inhabitants. The District is subdivided into 17 sectors, 92 cells, and 536 villages at a surface of 1007 km². Nyamagabe District is a rural district among sections far from the country's Capital; health supply chain data would differ from urban areas. The research chose the study area to explore supply chain characteristics based on inventory management control that would improve availing medicines for health facilities, particularly in rural areas.

2.7.Study design

A Regional warehouse-based cross-sectional retrospective study was conducted using quantitative methods to analyze the annual medicine expenditures and explore the pharmaceutical inventory control management by ABC Analysis, VEN analysis, and ABC-VEN analysis.

2.8.Study population

This study consisted of quantitative research, and all health products distributed to the health facilities of the Nyamagabe District catchment area were part of the study. A list of 457 essential

medicines was used for this study; it included all articles distributed to health facilities in essential generic medicines.

2.9. Study sample

All medicines managed at the regional pharmacy in the category of generics essential medicines were part of the study. However, the vertical programs medicines such as anti-retroviral, anti-malarial, anti-tuberculosis, and maternal and child health (MCH) commodities were not part of the study. The management of essential medicines is different from managing products of vertical programs.

The products of the vertical programs were excluded since there is a line for good management. Different stakeholders involved in managing vertical program medicines contribute to a daily follow-up, quantification, and fund mobilization to mitigate any problem.

2.10. Data collection methods and procedures

A data collection tool was designed to capture information about medicines distributed, quantity, unit price, and total prices of items that are part of the study. We collected distribution data of three years on essential generic medicines, sales, unit price, and total price in the study period for July 2017- June 2020. Data used are secondary data collected in the RMS Branch database and other management support tools: stock cards and reports. To search for information on VEN, we combined information from the existing literature with input from health professionals and personal assessments.

2.11. Data analysis

In the data analysis of this dissertation, we used statistical methods with Microsoft Excel 2013 for data entry and analysis. We used descriptive statistics, including tabular, graphical, and numerical methods, to describe the essential features. VEN analysis was done using judgmental methods by classifying products using existing references and discussing with experts, such as clinical pharmacists.

2.11.1. **ABC Analysis**

ABC analysis was done through the following steps

- a. All products distributed to the health facilities in the study period were considered, and it was applied to all products invoiced to health facilities.
- b. The unit cost for each product and the total quantity distributed was used to calculate the value of each item. We used an average cost for the same items received in different batches with different costs.

“Annual usage value per product” = “Annual number of items sold” x “Cost per item.”

- c. Calculation of the total value of items distributed in a given period
- d. Measure the percentage of each item by the total value
- e. Arrange products by descending order according to their total value, starting at the top with the highest value
- f. Calculate the cumulative percentage of the total value for each item, starting with the first item at the top and adding the rate progressively up to the last item.

2.11.2. **VEN Analysis**

The products analyzed for ABC were examined for VEN analysis. VEN analysis consisted of classifying those medicines based on the patients' health priorities. Few documentation exists for VEN classification, and no standards document exists in Rwanda (32). Because of the far-reaching implications for procurement and use, a designated expert committee best categorizes medicinal products into VEN categories, like a national medicinal product listing committee. Since there is no official classification of commodities into VEN in Rwanda, we contacted health professionals for further classification and used existing documents in different countries (32–35).

2.11.3. **ABC-VEN Analysis**

ABC and VEN analysis was combined by cross-tabulation to get the ABC-VEN matrix used to get different categories (23).

Table 1: ABC-VEN Matrix

	Vital	Essential	Nonessential
Category A	AV	AE	AN
Category B	BV	BE	BN
Category C	CV	CE	CN

Table 1 ABC-VEN Matrix

The first letter represents the product's place in ABC analysis, while the second represents the product's place in VEN analysis

As in ABC-VEN analysis, we have nine subcategories; three categories will be obtained as follows:

- **Category I:** AV, BV, CV, AE, AN all expensive or vital products.
- **Category II:** This category will include other products of B and E that are not in type I that are BE, BN, and CE
- **Category III** includes the cheapest and nonessential medicines in the CN subcategory(23).

2.12. Delimitation and limitation of the study

This study focused on inventory management with ABC-VEN analysis at RMS Ltd, Nyamagabe Branch. The study would not be extended to other Branches since it would have to be done in a limited time and resources.

2.13. Ethical consideration

Ethical approval with reference number CMHS/IRB/321/2021 from the University of Rwanda was issued for confidentiality information about health institution data. We obtained the necessary information for VEN classification from health professionals, and VEN classification was performed using an assessment method in conjunction with existing data from the literature.

3. RESULTS

3.1. List of medicines managed in the study area in the period of study

During the study period, we identified 457 medicines selected to be part of the study, and the list is in the appendix 1.

3.2. ABC analysis

The ABC analysis considered the total number of 457 essential generic medicines. We found that 90 products, representing 19.7% of all products sold, had 77.70% of the total cost of all products. These products were classified in Group A. In Group B, 119 products correspond to 26.03% of all products with 17.46% of the total cost, while in Group C, 248 products represent 54.27% of all products with a total cost of only 4.84% (see table 2).

Comparing the results of the individual years and the results of the ABC analysis separately, the results of 2017-2018 are similar to those of 2018-2019 and 2019-2020.

In 2019-2020, the ABC analysis considered the total number of 383 essential generic medicines. We found that 76 products, representing 19.84% of all products sold, had a value of 74.91% of the total cost of all products. These products were classified in Group A. In Group B, 116 products correspond to 30.29% of all products with 20% of the total cost, while in Group C, 191 products represent 49.87% of all products with a total cost of only 5.09% (see table 3).

Table 2: ABC analysis for the 2017-2020 period

ABC Classification	Number of items	Percentage of items	Value in Frw	Portion of the value by class
A	90	19.7	1,015,525,383	77.70
B	119	26.03	228,133,076	17.46
C	248	54.27	63,285,683	4.84
Total	457	100.00	1,306,944,142	100

Table 3: ABC Analysis for three years separately

ABC Classification	2017-2018			2018-2019			2019-2020		
	Items	% of products	Percentage of costs	Items	% of products	Percentage of costs	Items	% of products	Percentage of costs
A	68	19.6	76.37	74	19.79	74.32	77	19.95	75.33
B	105	30.26	18.76	113	30.21	20.18	116	30.05	19.59
C	174	50.14	4.87	187	50	5.5	193	50.00	5.09

Products that eat up a large part of the budget include antibiotics, medical consumables such as examination gloves, massive solutions, and medicines to treat non-communicable diseases. Amoxicillin, all forms combined, represent 9.68% of the total cost of all items distributed at the study site. All antibiotics in the top twenty commodities represent 15.06% of the total cost of all items. The following table demonstrates the top 20 products in the ABC classification.

Table 4: List of top twenty products ranked by the cost in three years

	ITEM DESCRIPTION	QUANTITY	Unit cost	Total cost Rwf	%
1	Amoxicillin 500mg capsules	2,955,800	22	66,069,566	5.05
2	Examination gloves T 7.5	44,047	1,484	65,387,250	5.00
3	Hydrophile gauze roll 91mx90cm	5,950	9,966	59,299,489	4.54
4	Amoxicillin 250mg capsule	2,896,000	11	31,558,633	2.41
5	Diclofenac suppository 100 mg	499,695	55	27,650,627	2.11
6	Butylscopolamine 10mg tablet	569,800	46	26,480,531	2.03
7	Nystatine 500000 UI TAB	825,700	32	26,410,107	2.02
8	Cloxacilline 250mg gel	1,738,000	14	25,160,126	1.92
9	Penicillin V 250 mg tablet	1,814,000	13	23,272,419	1.78
10	Sodium chloride 0,9% fl 500ml	53,651	420	22,509,941	1.72
11	Cromoglycate disodic opht solution 2%	28,256	753	21,290,893	1.63
12	Amoxicillin 125mg/5ml susp 100ml b/1	61,065	323	19,743,355	1.51
13	Salbutamol spray 200 doses b/1	12,976	1,395	18,107,775	1.38
14	Campher 10% ointment 50g b/1	43,749	388	16,956,785	1.30
15	Erythromycin 250 mg tablet b/1000	779,000	22	16,840,748	1.29
16	Omeprazole 20 mg capsules	1,589,300	10	15,893,684	1.22
17	Ibuprofen 200mg tablet	3,165,000	5	15,637,688	1.20
18	Paracetamol 500mg tablet	3,723,000	4	15,137,612	1.16
19	Nifedipine 20mg tablet	1,427,900	11	15,080,827	1.15
20	Ibuprofen 400mg tablet	1,466,000	10	14,472,425	1.11

3.3.VEN Analysis

In the VEN analysis, 202 products (44.20%) were classified as essential products, 231 products (50.54%) as essential medicines, and 24 products (5.26%) as non-essential products. Vital products accounted for 38.2% of the total cost, essential products 59.17%, and non-essential products 2.63% (see table 5).

Table 5: VEN Classification

VEN Classification	Number of items	Percentage of items	Value in Rwf	Percentage of value
V	202	44.20	499,196,750	38.20
E	231	50.54	773,311,022	59.17
N	24	5.26	34,436,370	2.63
TOTAL	457	100	1,306,944,142	100

3.4.ABC-VEN Analysis

There are three main classes in the ABC-VEN analysis classification: Class I, which includes AV, AE, AN, BV, and CV subcategories; Class II, which consists of the subcategories BE, BN and CE; and Class III, which includes the CN goods.

According to the ABC-VEN classification, Class I accounts for 55.80% of all medicines, corresponding to 87.88 % of the total costs. Class II accounts for 40.70% of all medicines, which is 11.82 % of the total cost, and Class III accounts for 3.50% of all medicines, which is 0.30% of the total cost (see tables 6 and 7).

Table 6: ABC Analysis in three main classes

Category	Number of items	Percentage of items	Amount Rwf	Percentage of value
I	255	55.80	1,148,486,802	87.88
II	186	40.70	154,512,583	11.82
III	16	3.50	3,944,756	0.30
TOTAL	457	100	1,306,944,142	100

Table 7: ABC - VEN Analysis in subcategories

VEN Classification subcategories	Number of items	Percentage	Amount Rwf	Percentage of the value
AV	37	8.09	366,235,331	28.02
AE	52	11.37	566,263,702	48.38
AN	1	0.22	16,956,785	1.30
BV	57	12.47	102,609,62	7.85
BE	55	12.05	111,988,625	8.57
BN	7	1.53	13,534,829	1.04
CV	108	23.63	30,351,798	2.32
CE	124	27.11	28,989,129	2.22
CN	16	3.50	3,944,756	0.30

4. DISCUSSIONS

4.1.ABC Analysis

The objective of this study was to analyze inventory management of health commodities based on ABC-VEN analysis. In the first step of the analysis, products were classified according to their priority in value, and an exhaustive list of 457 commodities was considered. The study showed that a number of a few items, 19.7%, were in category A with a total value of 77.7% of all products. This verifies the principle of Paletto or the 80:20 rule (1). It highlights that health supply chain managers should attach importance to controlling products in that category. Products that eat up a large part of the budget include antibiotics, massive solutions, medical consumables, and antihypertensives. The results of this study are related to other studies conducted in different areas. A survey conducted by Vijaya in India in 2017 found that 23.7% of 414 items belonged to Class A and accounted for 70.5% of the total annual expenditure in selected hospitals in Tamil Nalu, India (6,27).

A study conducted by Nang Nwe in Bangkok in 2017 showed that Category A, with 12 % in the ABC analysis, accounted for 78 % of the total budget for essential products. Category B accounted for 22%, or 16%, and Category C accounted for 66%, or 6%, of the total expenditure. Only a few commodities consume significant funds in this study, and only one item accounts for 23 % (36).

Compared to a study conducted by Mohamed in the Republic of Sudan in 2016, the ABC analysis shows that a small number of items representing 16.98% of Class A account for 70.19%, while 61.15% of Class C account for only 9.92% of the total fund (26).

The study conducted in the Republic of Sudan to analyze the medicines procured by the National Medicines Supply Fund (NMSF) for 2015-2017, which included 584 imported items, reached similar results. In that study, 14% of medicines in category A consumed 75% of the budget, 17% of items in the B category cost 15%, and 69% in category C accounted for 10% of total drug spending. Among class A products, sodium chloride solution 0.9% w/v 500 ml solution for intravenous infusion ranks first with a 5% share of total spending (10). This product was among the top twenty products with high cost, and it is ranked fifth with 2.03% of the total cost of items distributed.

According to Bochkarev, antibiotics and antihypertensive are among the products that consume a large portion of the pharmaceutical budget (37). A study conducted in Greece also revealed that antibacterial products consume a large part of the total pharmaceutical expenditure within Hospitals (38).

Our study shows that antibiotics are among the products that consume a large budget, and these results are similar to the findings of the survey conducted in South Africa. The 2016 survey conducted in South Africa by Sharma showed that a large portion of the pharmaceutical expenditure was spent on antibiotics. Approximately 7% of the total drug price was spent on antibiotics (39). The first item that consumed a considerable budget in our study, amoxicillin, was among the most commonly procured antibiotics in South Africa.

According to Tobira, in the study done in Ethiopia in 2021, the ABC analysis showed that 12.1% of drugs were assigned to Class A, 10.8% to Class B, and 77.7% to Class C. These classes accounted for 80.1%, 10.8%, and 9.1% of total annual drug expenditures, respectively. Only 10 (1.8%) accounted for 39.8% of the annual consumption value in the products of class A. Among the most commonly used products, the three drugs accounted for 23.6% of annual drug expenditures. The concerned products are Amoxicillin 500 mg capsules, cloxacillin 500 mg capsules, and ceftriaxone 1gm injections (9).

4.2.VEN Analysis

In VEN analysis, category N represents a small number of products and justifies using standards treatment documents and selection following a national essential medicines list. A study conducted in Sudan showed that 45% of all items were in Class N.

The VEN analysis also showed that a small number of items (2.34%) in class V accounted for 5.46%, while class N comprised 45.01% of articles and 26.43% of total funds. The drug class with the highest expenditure was that of general anti-infectives for systemic use (40.37%), which also contributed the most to the increase in total drug expenditure (48.59%)(26).

According to Jobira, the VEN classification revealed that 16.9% classified as V and consumed 35.1%, 67.9% grouped as class E, which used 61.3%, 15.2% grouped as N class consumed 3.6% of the total cost (9). The finding is in line with the result of Tumaini HL study conducted in Tanzania stated that 17% of items were vital, 68.5% items were essential, and 14.5% items were non-essential medicines of total procured drugs.

4.3.ABC-VEN Analysis

In a study conducted by Jobira in Ethiopia in 2021, the ABC-VEN analysis showed that 26.6% of all items fell into category I, with the most significant proportion in categories A and V, accounting for 84.7% of annual income drug expenditure. 49.2% and 24.2% of drugs fell into categories II and III, which accounted for only 13.2% and 2.1% of total drug spending, respectively(9).

The ABC-VEN matrix analysis study of the medicines inventory conducted by Woldeyohanins 2020 in Ethiopia revealed that 147 items (66.5%) identified as Category I consume 88.99% of the annual drug expenditure. The remaining 51 (23.07%) and 23 (10.47%) items belong to categories II and III and consume 9.3% and 1.81%, respectively(17).

The results of the study are similar to those of other studies. According to Sabah, Category I accounted for 16.67 % of the drug population studied, and its expenditure accounted for 71.47 % of total expenditure. Category II accounted for 58.69 %, and their annual consumption accounted for 27.67 % of the total expenditure. The third category, 24.64 %, accounted for 0.86 % of total expenditure(18).

Among products in the first category are antibiotics, anti-inflammatories, antipyretics, anti-hypertensive, massive solution, anti-gastroenteritis, medical consumables, mental health problem-related issues medicines, and antacids. One product, campher ointment, in the first category is non-essential. Omeprazole was ranked among the top drugs with high expenditure, possibly resulting in prescription habits. A study conducted in Tanzania at Mwananyamala regional hospital found the same results whether proton pump inhibitors, including omeprazole, are among products with high expenditure(40)

5. CONCLUSIONS AND RECOMMENDATIONS

From the results of this study, given that medicines are costly, life-saving, and may be harmful, on the other hand, when they are not adequately used, inventory control management is recommended in health supply chain entities at different levels. Products that consume a significant portion should be monitored carefully, and a similar study would be conducted in Rwanda to explore more inventory control management. This study done in the rural setting would be conducted in other country regions to reveal the reality faced in different areas and health facilities. Category of products most used like antibiotics, antihypertensive, and medical consumables would be examined carefully. In addition, studies like antimicrobial resistance current trend, prescription habits among anti-infectious commodities, antihypertensive commodities, and others.

Various inventory control methods can be used for inventory management. Matrix analysis is one of the stock control techniques for identifying items that require close monitoring. By coupling ABC with VEN, meaningful stock control becomes possible.

According to ABC-VEN analysis, medications that require high inventory control are in category I, and among those products, there are antibiotics, massive solutions, and antihypertensive commodities. High importance should also be attached to lab reagents in vital products and anti-diabetes.

According to the literature, this study is among the few studies done on inventory management in Rwanda. Given that the technique used in the study is not complicated to provide relevant information, it would be applied in other health facilities to improve inventory management in the optimization of resources. Given that the study is done in one rural District, the results would not be generalized to other districts and the whole country; thereby, similar studies would be conducted in different areas to explore inventory management in health facilities.

According to the findings of the study, we recommend the following recommendations:

For the researchers;

- To conduct similar studies in different sites, supply chain entities to analyze the trend of most used commodities conducted special studies on the uses of antibiotics to varying levels of healthcare service delivery.

To health supply chain managers;

- to adopt the ABC/VEN tool for planning commodities purchased in a given period.

To health facilities managers in the catchment area of the study:

- to improve the use of an electronic tool in pharmaceutical management to allow the availability of data to predict trends on medicines uses and facilitation on further studies in the supply chain area;
- To plan stock replenishment based on medicines prioritization taking into account the medicines classification.

To Health policymakers;

- to conduct a regular review on medicines uses, update national essential medicines list according to current information, and categorize health commodities in VEN classes.

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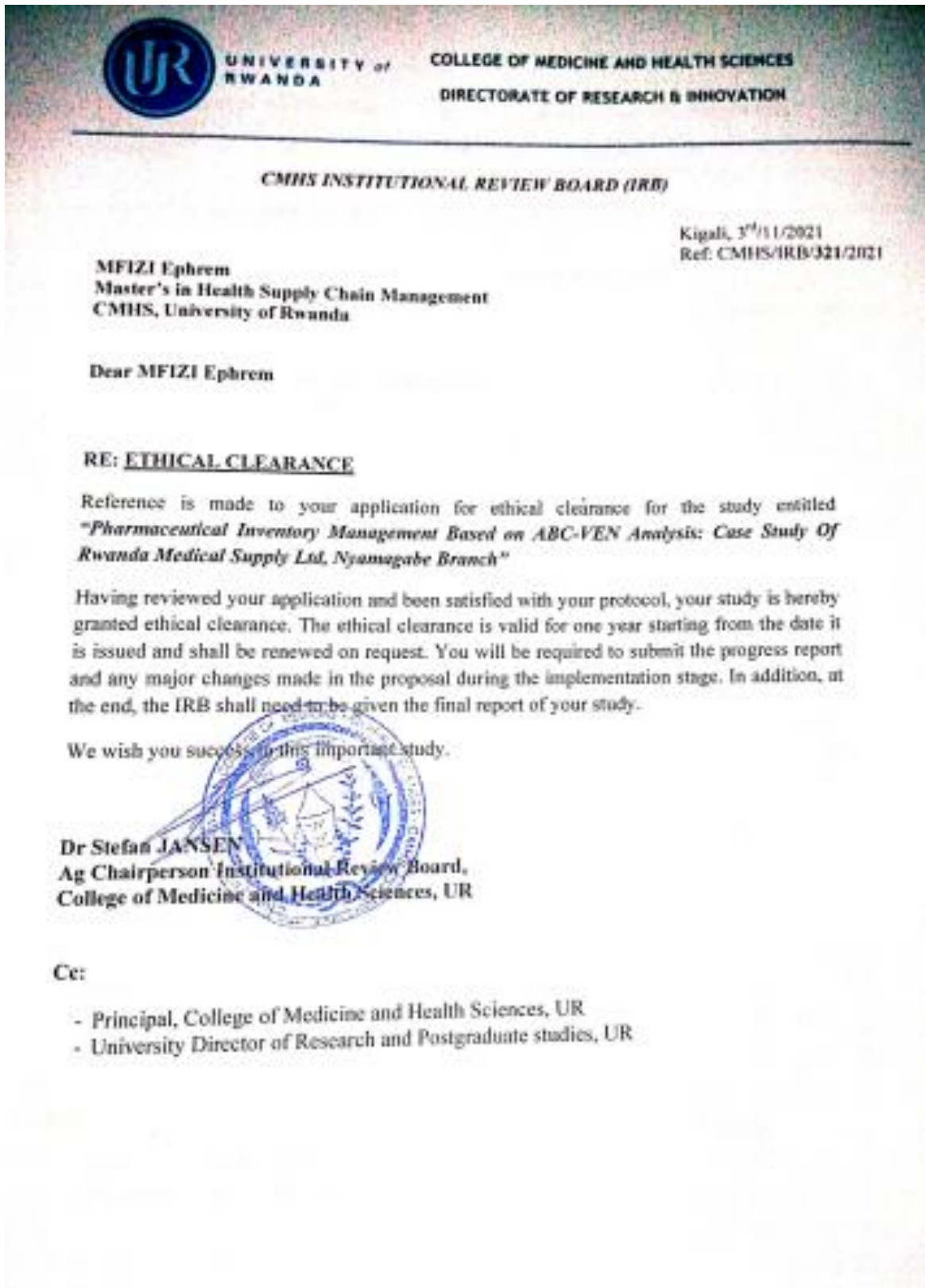
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APPENDIXES

Appendix I: Ethical Clearance



Appendix II. List of medicines in ABC and VEN classification

Table 8: List of medicines in ABC and VEN classification

No	Item description	ABC	VEN	Quantity	Unit Price	COST / RWF	Percentage	Cumulative percentage
1	Amoxicillin 500mg capsules	A	E	2,955,800	22	66,069,566	5.06	5.06
2	Examiantion gloves T 7.5	A	V	44,047	1,484	65,387,250	5.00	10.06
3	Gauz Roll 90cmx91m, 1.5 Kg	A	V	5,950	9,966	59,299,489	4.54	14.60
4	Amoxicillin 250mg capsules	A	E	2,896,000	11	31,558,633	2.41	17.01
5	Diclofenac suppo 100mg	A	E	499,695	55	27,650,627	2.12	19.13
6	Butylscopolamine 10mg tab	A	E	569,800	46	26,480,531	2.03	21.15
7	Nystatin 500000 UI tab	A	E	825,700	32	26,410,107	2.02	23.17
8	Cloxaciline 250mg capsules	A	E	1,738,000	14	25,160,126	1.93	25.10
9	Penicillin V 250mg tab	A	E	1,814,000	13	23,272,419	1.78	26.88
10	Sodium chloride 0,9% fl 500ml	A	V	53,651	420	22,509,941	1.72	28.60
11	Cromoglycate sodium eye drop	A	E	28,256	753	21,290,893	1.63	30.23
12	Amoxicillin 125mg/5ml syrup 100ml	A	E	61,065	323	19,743,355	1.51	31.74
13	Salbutamol spray 0.200mg	A	E	12,976	1,395	18,107,775	1.39	33.13
14	Campher Ointment 50g, tube	A	N	43,749	388	16,956,785	1.30	34.42
15	Erythromycin 250mg tab	A	E	779,000	22	16,840,748	1.29	35.71
16	Omeprazol 20 mg tab	A	E	1,589,300	10	15,893,684	1.22	36.93
17	Ibuprofen 200mg tab	A	E	3,165,000	5	15,637,688	1.20	38.12
18	Paracetamol 500mg tab	A	E	3,723,000	4	15,137,612	1.16	39.28
19	Nifedipin 20mg retard cp	A	E	1,427,900	11	15,080,827	1.15	40.44
20	Ibuprofen 400mg cp	A	E	1,466,000	10	14,472,425	1.11	41.54
21	Thiamine chlorhydrate 100mg Tab (Vit B1)	A	E	1,672,000	9	14,384,290	1.10	42.64
22	Metronidazol 250mg tab	A	E	3,118,000	5	14,231,309	1.09	43.73
23	Aluminium Hydroxyde Sirop	A	E	55,075	238	13,093,500	1.00	44.74
24	Ringer lactate flacon de 500ml	A	V	29,434	431	12,685,237	0.97	45.71
25	Amoxy+ clavulanic acid 625 cp	A	E	103,122	110	11,292,137	0.86	46.57
26	Lidocain 2% +epineph 1.8ml dent inj	A	V	42,650	263	11,207,146	0.86	47.43
27	RANITIDINE 150MG tab	A	E	27,300	406	11,072,040	0.85	48.27
28	Microscope slides 1 pce	A	V	159,968	63	10,138,500	0.78	49.05
29	Minigrip sacs, pce	A	E	2,077,600	5	9,970,336	0.76	49.81
30	Surgical gloves T 7.5 B/50 Pairs	A	V	1,884	5,218	9,830,873	0.75	50.57
31	POLYGLACTIN 910 USPI, 1/2C 40MM	A	V	1,084	9,038	9,796,800	0.75	51.32
32	Paracetamol 120/5ml sp 100ml	A	E	40,352	242	9,772,473	0.75	52.06
33	Ciprofloxacin 500mg cp	A	E	429,700	22	9,517,400	0.73	52.79
34	Barrier Masks	A	V	20,000	460	9,200,000	0.70	53.50
35	Cotrimoxazole à 480mg cp	A	E	1,055,000	9	8,971,130	0.69	54.18
36	H.PYLORI 50tests	A	E	315	27,632	8,704,160	0.67	54.85
37	Valproate de sodium 300mg cp(depakine)	A	E	149,700	58	8,662,580	0.66	55.51
38	Iodine Polyvidone 10%, 200ml	A	V	7,470	1,157	8,642,790	0.66	56.17
39	Poch Pack 65x 9.0L+185ML	A	V	57	143,095	8,156,400	0.62	56.80
40	Captopril 25mg cp	A	E	906,500	9	8,049,229	0.62	57.41
41	Film radiologie 35cm x 35cm,pce	A	V	1,101	7,288	8,024,121	0.61	58.03
42	Insuline humaine 100UI/ml lente, inj	A	V	2,374	3,279	7,785,192	0.60	58.62
43	Valproate de sodium 500mg cp	A	E	69,700	109	7,618,934	0.58	59.20

44	Seringue de 10ml + aiguille 21 G plastic uu	A	V	176,983	43	7,564,465	0.58	59.78
45	Phenobarbital 100 mg cp	A	E	290,100	26	7,511,086	0.57	60.36
46	Sparadrap à oxyde de zinc 10CM X5M,pce	A	V	8,222	888	7,297,367	0.56	60.92
47	Vaccin anti rabique	A	V	1,220	5,777	7,048,041	0.54	61.46
48	Nystatine sp fl de 30ml	A	E	16,983	409	6,942,292	0.53	61.99
49	Fer sulf 200mg+ Acide folic 0.25mg cp	A	E	2,891,000	2	6,641,451	0.51	62.49
50	Beclomethasone spray 250mg	A	E	900	7,313	6,581,600	0.50	63.00
51	Glucometer test strip code free B/50	A	E	604	10,523	6,355,835	0.49	63.48
52	Rubella Test IgM/G,1pc	A	V	6,640	954	6,336,900	0.48	63.97
53	Insuline humaine 100UI/ml rapide, inj	A	V	1,807	3,391	6,127,209	0.47	64.44
54	Alcool denature 96% llitter	A	V	1,762	3,289	5,794,697	0.44	64.88
55	Glucosé 5% fl de 500ml	A	V	10,641	538	5,722,636	0.44	65.32
56	Methyldopa 250mg cp(aldomed)	A	E	197,501	29	5,699,024	0.44	65.76
57	Ceftriaxone 1g pdre inj	A	V	23,735	237	5,632,912	0.43	66.19
58	Eau pour Injection 10 ml	A	V	157,422	36	5,617,304	0.43	66.62
59	Indomethacine suppo 100mg	A	E	116,800	47	5,504,220	0.42	67.04
60	Benzyl benzoate 25% fl ll	A	E	808	6,711	5,422,380	0.41	67.45
61	Acide ascorbique 500mg cp	A	E	601,000	9	5,309,024	0.41	67.86
62	Ampicilline inj 1g flaçon	A	V	42,035	123	5,155,733	0.39	68.25
63	Erytromycine 125mg/ 5ml susp. fl de 100ml	A	E	10,734	475	5,100,777	0.39	68.64
64	Cefotaxime 1g pdre inj	A	V	17,100	291	4,973,000	0.38	69.02
65	Valproate de sodium 200 mg cp	A	E	75,512	65	4,912,484	0.38	69.40
66	CELL PACK 20 L	A	V	47	103,753	4,876,400	0.37	69.77
67	Ibuprofen syrup 100ml	A	E	16,879	288	4,866,898	0.37	70.15
68	HBsAg 50 tests	A	V	10,503	459	4,818,999	0.37	70.51
69	Tinidazole tab 500mg	A	E	328,100	14	4,747,173	0.36	70.88
70	Carbamazepine 200mg (tegretol)	A	E	337,300	14	4,734,430	0.36	71.24
71	Film radiologie 24cm X 30cm ,pce	A	V	1,002	4,707	4,716,080	0.36	71.60
72	TOXO RAPID TEST IgG/1gm 40Test	A	V	206	22,860	4,709,120	0.36	71.96
73	Salbutamol 500MicroG/ml amp. Inj	A	V	12,380	366	4,535,961	0.35	72.31
74	Tétracycline 1% opht.tube de 5g	A	E	33,416	136	4,532,870	0.35	72.65
75	Seringue de 5ml + aiguille 21 G plastic uu	A	V	163,600	28	4,512,364	0.35	73.00
76	Prednisolone 5mg cp	A	E	647,000	7	4,479,054	0.34	73.34
77	Paracetamol 250mg Suppo	A	E	81,410	54	4,391,444	0.34	73.68
78	Gant gynecologique sterile	A	V	7,550	578	4,363,924	0.33	74.01
79	Hydrochlorothiazide 25mg cp	A	E	862,000	5	4,245,945	0.32	74.34
80	Vitamine K inj	A	V	15,971	258	4,118,764	0.32	74.65
81	Chlorpheniramine 2mg sp 60ml	A	E	24,094	171	4,110,623	0.31	74.97
82	Métronidazole sirop 125mg/5ml fl de 100ml	A	E	14,387	285	4,093,649	0.31	75.28
83	Cimetidine 400 mg cp	A	E	336,000	12	4,024,017	0.31	75.59
84	Doxycycline 100mg cp	A	E	311,000	13	3,995,061	0.31	75.89
85	Cotrimoxazole à 240mg /5ml sp fl de100ml	A	E	15,122	264	3,985,401	0.30	76.20
86	Microcuvettes hb 201 B/200	A	V	20	199,167	3,983,333	0.30	76.50
87	Catheter court IV n°24 pce	A	V	37,459	106	3,980,503	0.30	76.81

88	Catgut chrome dec 3.5(2/0),PR 1/2C, 40MM	A	V	1,284	3,086	3,962,995	0.30	77.11
89	HCV 40 Test	A	V	394	9,938	3,915,480	0.30	77.41
90	Set de perfusion +aiguille pce	A	V	33,448	114	3,807,405	0.29	77.70
91	URINE TEST STRIP	B	V	499	7,312	3,648,585	0.28	77.98
92	Indomethacin gelules 25mg cp	B	E	953,000	4	3,509,380	0.27	78.25
93	Cloxacilline sp 125mg/5ml 100ml	B	E	10,564	331	3,496,266	0.27	78.52
94	Chlorhexidine 1,5 % +Cétrimide 15 % ll	B	E	1,282	2,721	3,488,138	0.27	78.78
95	CRP Latex And COntrOl 100 Test	B	V	304	11,464	3,484,913	0.27	79.05
96	Misoprostol (C yototec) 0.2mg cp	B	V	9,108	377	3,438,246	0.26	79.31
97	Vaseline blanche Pot de 1/2Kg	B	E	1,567	2,191	3,433,020	0.26	79.58
98	Cloxacilline 500mg inj	B	V	24,000	139	3,337,469	0.26	79.83
99	Solution physiologique gttes nasales 0.9%	B	N	9,409	353	3,323,032	0.25	80.09
100	Multivitamines sirop fl de 100ml	B	E	12,945	256	3,315,756	0.25	80.34
101	Diclofenac 50mg cp	B	E	1,275,000	3	3,310,135	0.25	80.59
102	Masque nez + Bouche (Facial)	B	E	36,724	90	3,299,460	0.25	80.85
103	Griséofulvine 500mg cp	B	E	66,700	48	3,175,939	0.24	81.09
104	Calcium gluconate Inj 10ml	B	V	7,465	420	3,138,164	0.24	81.33
105	Acétylsalicylique acide 500mg cp	B	E	735,000	4	3,133,992	0.24	81.57
106	Specimen container pr Selle	B	E	39,103	80	3,119,804	0.24	81.81
107	Paracetamol suppo 125 mg	B	E	61,405	50	3,094,058	0.24	82.04
108	S.R.O sachet 20.5 g pour ll	B	E	47,111	64	2,998,403	0.23	82.27
109	Métronidazole 500mg 100ml inj	B	V	10,900	272	2,965,980	0.23	82.50
110	Stromatolyser 4 DL 2L	B	V	32	91,387	2,924,368	0.22	82.72
111	Bande de crêpe 10cm*4m 1 pce	B	V	13,315	213	2,838,006	0.22	82.94
112	Mebendazole sp 100mg/5ml fl de 30ml	B	E	14,801	191	2,828,368	0.22	83.16
113	Ampicilline 500 mg pdre inj,	B	V	31,885	88	2,800,460	0.21	83.37
114	Specimen container pr urine fl	B	V	32,200	86	2,756,000	0.21	83.58
115	Oxytocine inj. 10UI, IV	B	V	31,325	87	2,733,024	0.21	83.79
116	Amoxy+ acide clavilanique 100mg/12.5mg/ml	B	E	1,367	1,978	2,703,359	0.21	84.00
117	Bétamethasone 0.1% 15gr creme	B	N	12,517	214	2,682,390	0.21	84.20
118	RPR 150tests	B	V	300	8,868	2,660,341	0.20	84.41
119	Levomepromazine 25mg cp	B	E	13,900	188	2,619,758	0.20	84.61
120	Catheter Court IV, UU G 18	B	V	24,215	105	2,532,960	0.19	84.80
121	Spironolactone 25mg, cp	B	E	61,100	41	2,499,898	0.19	84.99
122	Coton hydrophile rl 500g,1 pce	B	E	1,580	1,577	2,491,965	0.19	85.18
123	Butylscopolamine 20mg/ml inj	B	V	13,629	182	2,482,270	0.19	85.37
124	Promethazine 5mg/ml sirop fl de 60ml	B	E	11,460	204	2,338,227	0.18	85.55
125	Chloramphénicol collyre à 0,5 % fl	B	E	11,936	192	2,292,175	0.18	85.73
126	Medical Infrared Thermometer	B	N	38	59,979	2,279,200	0.17	85.90
127	Valproate de sodium 200mg/ml, 100ml Syrup	B	E	437	5,140	2,246,000	0.17	86.07
128	Papaverine40mgcp	B	E	110,000	20	2,227,200	0.17	86.24
129	Ketoconazole crème 2% 15g	B	E	8,376	264	2,215,014	0.17	86.41
130	METFORMINE 500MG TAB B/100	B	E	200,900	11	2,154,130	0.16	86.58
131	Mebendazole 100mg cp	B	E	509,000	4	2,124,036	0.16	86.74
132	Aminophylline 100mg cp	B	E	611,000	3	2,116,656	0.16	86.90
133	Hydrochlorothiazide 50mg cp	B	E	373,000	6	2,115,242	0.16	87.07

134	Sulfolyser 500ml sln	B	V	18	115,578	2,080,400	0.16	87.22
135	TOXO RAPID TEST IGG/M B/25TESTS	B	V	76	27,242	2,070,400	0.16	87.38
136	Catheter court IV n°20 pce	B	V	20,192	102	2,066,158	0.16	87.54
137	Bupivacaine Isoabar 0.5% 5mg/ml fl 20ml	B	V	533	3,815	2,033,600	0.16	87.70
138	Whitfield pommade tube de 50g	B	N	2,645	767	2,027,687	0.16	87.85
139	Albendazole 400mg Tabs B/100	B	E	64,700	31	1,989,005	0.15	88.00
140	Tensiomètre digital, pce	B	V	57	34,562	1,970,014	0.15	88.15
141	TOXO latex 100 TEST kit	B	V	69	28,007	1,932,500	0.15	88.30
142	Pyridoxine 100mg cp	B	E	137,000	14	1,928,000	0.15	88.45
143	Aiguille dentaire 27GB 1pce	B	V	33,105	57	1,874,866	0.14	88.59
144	Acétylsalicylate de lysine 0.9g/5ml amp	B	V	4,237	438	1,857,666	0.14	88.74
145	Ciprofloxacine 250mg cp	B	E	104,000	17	1,816,319	0.14	88.87
146	Seringue de 2ml + aiguille 23 G plastic uu pce	B	V	65,915	27	1,800,266	0.14	89.01
147	Aluminium Hydroxyde 500mg ces	B	E	549,000	3	1,794,523	0.14	89.15
148	Fentanil 0.05mg/ml amp 2ml	B	V	660	2,680	1,768,650	0.14	89.29
149	Hydrocortisone 100mg/ml fl inj	B	V	6,806	258	1,755,446	0.13	89.42
150	Lamelles Couvre objet	B	V	293	5,926	1,736,446	0.13	89.55
151	Thiamine 50mg	B	E	248,000	7	1,731,644	0.13	89.68
152	Acide nalidixique 500mg cp	B	E	43,900	39	1,726,031	0.13	89.82
153	Sonde vésicale de Foley 2 voies ch 16 pce	B	V	5,142	331	1,703,822	0.13	89.95
154	Nystatine 100 000 UI cp vaginal	B	E	71,972	24	1,695,308	0.13	90.08
155	Multivitamines cp	B	E	751,000	2	1,665,473	0.13	90.20
156	Serum antitetanique inj	B	V	660	2,464	1,626,000	0.12	90.33
157	ASLO KIT 100 TEST	B	E	139	11,516	1,600,749	0.12	90.45
158	Zinc sulfate tablet 20MG B/100	B	E	174,200	9	1,599,994	0.12	90.57
159	Lidocaine 2% fl inj 30ml	B	V	5,970	266	1,588,902	0.12	90.70
160	Ketoconazole 200mg cp BTE B/1000	B	E	89,000	17	1,554,476	0.12	90.81
161	Seringue a insuline 100 UI+aiguille 29G PCE	B	V	36,600	41	1,508,820	0.12	90.93
162	Stromatolyser 4 DS, 42ml	B	V	13	113,848	1,480,020	0.11	91.04
163	Diclofenac 25mg/ml inj amp de 3ml	B	V	32,023	46	1,476,959	0.11	91.16
164	METFORMINE 850MG TAB B/1000	B	E	114,400	13	1,453,155	0.11	91.27
165	Lancette stérile UU 200 pces	B	V	811	1,783	1,446,281	0.11	91.38
166	Tramadol 50mg, cp	B	E	91,800	16	1,425,749	0.11	91.49
167	Bande plâtrée 15cm x 2.7m	B	V	4,024	353	1,421,822	0.11	91.60
168	SOLUTION HYDROALCOOLIQUE 5L	B	E	71	20,000	1,420,000	0.11	91.70
169	Vitamine B Complexe cp	B	E	938,000	1	1,405,275	0.11	91.81
170	Test de grossesse pce	B	V	19,560	70	1,374,864	0.11	91.92
171	Metronidazole ovule 500mg	B	E	17,100	79	1,353,825	0.10	92.02
172	Glucosé 50% fl de 100ml	B	V	1,899	707	1,342,600	0.10	92.12
173	Cimetidine 100mg/ml 2ml inj.	B	V	8,910	150	1,335,776	0.10	92.23
174	Benzathine benzyl.penicilline 2,4Mui	B	V	7,218	183	1,320,318	0.10	92.33
175	Umbilical cord clamps sterile	B	V	20,756	63	1,305,057	0.10	92.43
176	Set de perfusion pediatrique	B	V	1,850	693	1,281,750	0.10	92.52
177	AST/GOT 4+1 SL 2x6.2ML	B	V	15	84,280	1,264,200	0.10	92.62

178	Amitriptylline Hydro 25mg cp	B	E	331,000	4	1,222,261	0.09	92.71
179	Dexamethazone 0.1% collyre	B	N	3,590	337	1,208,514	0.09	92.81
180	RHo(D) Immune Globulin inj	B	V	60	19,652	1,179,120	0.09	92.90
181	Cimetidine 200 mg cp	B	E	206,000	6	1,165,729	0.09	92.99
182	BENZYL BENZOATE 100ML 25%	B	E	2,304	506	1,165,600	0.09	93.08
183	GRAM STAIN	B	V	56	20,750	1,161,972	0.09	93.16
184	Cinnarizine 25mg cp	B	E	89,000	13	1,145,636	0.09	93.25
185	Chloramphénicol 250mg gel	B	N	61,000	19	1,130,211	0.09	93.34
186	Sterilizationa Air Sec 60l	B	V	1	1,119,000	1,119,000	0.09	93.42
187	GLUCOSE PAP SL 6x10ML	B	V	9	123,411	1,110,700	0.08	93.51
188	Fer + Acide folique sp	B	E	490	2,249	1,102,188	0.08	93.59
189	Lame de bistouris n° 22	B	V	30,612	35	1,083,490	0.08	93.68
190	Gentamicine 40mg /ml inj	B	V	24,620	44	1,076,665	0.08	93.76
191	HCV Ab Rapid test strip, 50test	B	V	100	10,664	1,066,400	0.08	93.84
192	Chlormpheniramine 4 mg ces	B	E	1,209,000	1	1,048,724	0.08	93.92
193	Haloperidol 5mg cp	B	E	166,300	6	1,044,881	0.08	94.00
194	Tube sec vacutainer 4ml B/100	B	V	201	5,190	1,043,120	0.08	94.08
195	Serum anti D (IgG IgM) Monoclonal 10ml 1 fl	B	V	275	3,758	1,033,375	0.08	94.16
196	RF Kit 100 Test	B	V	106	9,724	1,030,700	0.08	94.24
197	Chloramphenicol gouttes otique 5%	B	E	3,620	268	970,417	0.07	94.31
198	Giemsa solution 0.5l	B	E	84	11,310	950,050	0.07	94.39
199	Furosemide 40mg cp	B	V	310,000	3	943,042	0.07	94.46
200	UREA UV SL 4X62.5ML	B	V	12	78,085	937,016	0.07	94.53
201	GLUCOSE 10% 250ML PERF	B	V	2,195	426	934,255	0.07	94.60
202	Dexamethazone+ Neomycine 2% Collyre	B	E	2,500	373	931,850	0.07	94.67
203	Haloperidol 5mg inj	B	V	793	1,162	921,805	0.07	94.74
204	Amoldipine 10mg	B	E	62,000	15	919,600	0.07	94.81
205	Chlorpromazine 25 mg cp	B	E	238,000	4	914,322	0.07	94.88
206	Alcool denature 95%, 5l	B	V	81	11,142	902,471	0.07	94.95
207	Haemacell 30g/l fl 500ml	B	V	113	7,983	902,100	0.07	95.02
208	Glibenclamide 5mg cp	B	E	337,000	3	901,465	0.07	95.09
209	Hydrocortisone cream 20gr 1%	B	N	3,089	286	883,795	0.07	95.16
210	Dicynone 250 mg 1cp	C	V	7,000	121	848,450	0.06	95.22
211	Phenobarbital 100mg inj	C	V	1,312	645	846,450	0.06	95.29
212	Mosquito net white 1250x65x250 pce	C	V	190	4,450	845,500	0.06	95.35
213	Thermometre médical digital 1pce	C	E	205	4,113	843,150	0.06	95.42
214	Whitfield 20gr pde	C	N	5,285	159	841,760	0.06	95.48
215	Sac à Urine	C	V	4,311	194	837,299	0.06	95.55
216	Sonde vésicale de Foley 2 voies ch 18 pce	C	V	2,240	368	824,602	0.06	95.61
217	CREATININE JAFFE 2x125ML	C	V	10	82,395	823,950	0.06	95.67
218	Diazepam 5mg cp	C	E	69,020	12	813,912	0.06	95.73
219	Ephedrine 50mg/ml inj	C	V	2,580	294	757,450	0.06	95.79
220	Aiguille a PL 22 G 90MM	C	V	2,536	298	756,642	0.06	95.85
221	Pommade Camphre 100gr	C	N	980	750	735,000	0.06	95.91
222	Huile à Immersion	C	V	84	8,749	734,922	0.06	95.96
223	Comprime d'eau de Javel 150gr, 100ces	C	E	4,805	151	723,823	0.06	96.02
224	Promethazine 25mg cp	C	E	206,500	3	711,719	0.05	96.07
225	Nystatine Ointment	C	E	365	1,937	707,133	0.05	96.13

226	Diazepan 5mg/ml amp inj. 2ml	C	V	1,790	394	705,875	0.05	96.18
227	Serum anti B Monoclonal 10ml 1 flacon Biotec	C	V	274	2,564	702,412	0.05	96.23
228	Glass ionomer(GC Gold label) kit	C	E	10	66,050	660,500	0.05	96.28
229	ALT/GPT 4+1SL 2x62.ML	C	V	12	55,000	660,000	0.05	96.33
230	Serum anti A Monoclonal 10ml 1 flacon Biotec	C	V	263	2,503	658,376	0.05	96.38
231	Prednisolone 1% collyre	C	E	580	1,118	648,300	0.05	96.43
232	Human GPT KIT	C	V	18	35,540	639,720	0.05	96.48
233	Fil NR Synth 75cm PR N°1 1/2C 40mm B/12	C	V	268	2,348	629,351	0.05	96.53
234	Pommade ichtyiol 10% pot de 50g	C	N	463	1,342	621,443	0.05	96.58
235	URIC ACID MONO SL 6x50ML	C	V	5	123,300	616,500	0.05	96.63
236	Chloramphénicol inj 1g	C	V	2,216	277	614,763	0.05	96.67
237	HC Eolyse 1L	C	E	6	101,167	607,000	0.05	96.72
238	Paracétamol 100mg cp	C	E	422,000	1	600,015	0.05	96.77
239	Comprime d'eau de javel 150g, 48pastilles	C	E	95	6,297	598,200	0.05	96.81
240	REVELATEUR FILM RADIO 20 LTRS	C	E	12	48,146	577,750	0.04	96.86
241	Magnesium trisilicate 550mg cp	C	E	260,000	2	575,385	0.04	96.90
242	Paracetamol 100mg/ml inj	C	V	550	1,036	570,000	0.04	96.94
243	Abaisse langue en bois pce	C	E	13,809	41	568,122	0.04	96.99
244	Acétylsalicylique acide 100mg cp	C	E	192,000	3	554,902	0.04	97.03
245	Film Radiologie 35cm x 43cm, pce	C	V	600	910	546,200	0.04	97.07
246	R.P.R KIT 100 TEST	C	V	79	6,848	541,000	0.04	97.11
247	Violet de gentiane poudre 25g	C	V	76	7,074	537,600	0.04	97.15
248	Biperdene 2 MG TAB	C	E	8,250	65	532,275	0.04	97.19
249	Promethazine 100ml sp	C	E	2,015	263	529,990	0.04	97.23
250	Serum anti AB Monoclonal 10ml 1 flacon Biot	C	V	167	3,093	516,511	0.04	97.27
251	Magnesium sulfate 50% 10ml inj	C	V	879	586	515,100	0.04	97.31
252	Salbutamol 4mg cp	C	E	380,000	1	502,583	0.04	97.35
253	Compresse paraffine 10x10cm(Tulle gras)	C	V	4,840	103	499,570	0.04	97.39
254	EE SYSTEM SOLUTION 1 L	C	E	6	83,100	498,600	0.04	97.43
255	Clotrimazole 100mg, cp vaginal	C	E	10,182	48	485,084	0.04	97.47
256	ELITROL II 10x5ML	C	E	5	95,194	475,970	0.04	97.50
257	Morphine 10mg/ml, inj	C	V	980	484	474,608	0.04	97.54
258	Cotrimoxazole à 120mg cp	C	E	122,000	4	469,537	0.04	97.57
259	Furosemide 10mg/ml 2ml inj	C	V	8,250	56	462,072	0.04	97.61
260	Aminophylline 25mg/ml amp de 10ml	C	V	4,670	98	459,785	0.04	97.64
261	Sparadrap perforé 18cmx5m pce	C	V	190	2,329	442,500	0.03	97.68
262	ISE CONTROL I 10X5ML	C	E	3	145,600	436,800	0.03	97.71
263	Permanganate de potassium 500mg ce	C	N	8,550	51	435,861	0.03	97.75
264	Glucose 10% 500ml	C	V	660	656	433,200	0.03	97.78
265	Nitrofurantoine 100 MG CP	C	E	77,000	6	429,508	0.03	97.81
266	Aniosgel 500ml	C	E	50	8,500	425,000	0.03	97.84
267	Chlorpromazine 50mg/2ml inj (Largactil)	C	V	2,480	171	423,687	0.03	97.88
268	HC BASOLYSE	C	E	4	105,250	421,000	0.03	97.91
269	Gel pour echographie 5 L	C	V	40	10,404	416,140	0.03	97.94

270	Centrifugeuse electriquen220V	C	E	1	416,000	416,000	0.03	97.97
271	ELICAL 2-4X3ML	C	E	4	102,533	410,130	0.03	98.00
272	Haloperidol Decanoate inj	C	V	67	6,075	406,996	0.03	98.03
273	CHOLESTROL 6X100ML	C	E	1	406,760	406,760	0.03	98.07
274	ELITROL I 10x5ML	C	E	4	101,663	406,650	0.03	98.10
275	Morphine 10mg Tab	C	E	1,440	280	403,200	0.03	98.13
276	Pommade antihemorroide pot de 30g	C	E	350	1,102	385,720	0.03	98.16
277	Cinnarizine 75 mg cp	C	E	14,000	27	381,450	0.03	98.19
278	Amalgame dentaire capsule	C	E	7	54,486	381,400	0.03	98.22
279	Sonde d'aspiration CH 8	C	V	2,584	147	380,390	0.03	98.25
280	Glucometer CODE free	C	V	39	9,667	377,000	0.03	98.27
281	Fil 35 x 43	C	E	300	1,250	375,000	0.03	98.30
282	Gauze Abdominal 45cmx45cm PCE	C	V	800	462	369,840	0.03	98.33
283	Gentamycine 0.3% 10ml collyre	C	E	2,283	161	367,443	0.03	98.36
284	Human GOT KIT	C	V	11	32,500	357,500	0.03	98.39
285	ACID SOLUTION 1 L	C	V	4	88,721	354,882	0.03	98.41
286	Aiguille Poncti Lomb Luer 22G 90mm(spinall	C	V	1,000	345	344,981	0.03	98.44
287	Ketamine 50MG/ML, FL 10ML inj	C	V	214	1,608	344,040	0.03	98.47
288	Hydrocortisone collyre 5ml 1 %	C	E	780	438	341,710	0.03	98.49
289	Alcool 70% 1 litter	C	V	40	8,511	340,433	0.03	98.52
290	Lactulose (Duphalac sol) 3.33gr/5ml	C	E	180	1,883	339,000	0.03	98.54
291	Atenolol 100mg	C	E	27,600	12	335,061	0.03	98.57
292	Polyglactin no. 2/0 910 75cm B/12	C	V	36	9,300	334,800	0.03	98.60
293	Pénicilline Procaine 1mui+3mui fl	C	V	1,705	195	332,737	0.03	98.62
294	Halothane inhalation fl 250ml	C	V	10	33,064	330,642	0.03	98.65
295	Prednisolone 0.5% collyre	C	E	240	1,351	324,210	0.02	98.67
296	HC Cleaner 1L	C	V	5	64,800	324,000	0.02	98.70
297	Clomipramine 25mg cp (anafranil 25mg) cp	C	E	10,360	31	320,428	0.02	98.72
298	Tramadol hydrochloride 100mg/2ml, inj	C	V	1,470	214	314,148	0.02	98.74
299	Ibuprofen sirop 60ml fl	C	E	1,160	270	313,200	0.02	98.77
300	Tube vacutainer EDTA 4ML B/100	C	V	65	4,793	311,550	0.02	98.79
301	Catheter Court IV, UU G22	C	V	2,670	116	309,766	0.02	98.82
302	Fil 30x 40	C	V	400	735	293,808	0.02	98.84
303	EAU OXYGENEE 120ML	C	E	1,105	264	291,685	0.02	98.86
304	ISE CONTROL II 10X5ML	C	E	2	145,600	291,200	0.02	98.88
305	Fixateur Film Solution Concentree RX 20L	C	E	15	19,408	291,115	0.02	98.91
306	Film Radiologie 30 cmx 40cm,pce	C	E	400	727	290,943	0.02	98.93
307	SURFANIOS PREMIUM 1L	C	N	10	28,000	280,000	0.02	98.95
308	Salbutamol sirop 100ml	C	E	1,042	263	274,010	0.02	98.97
309	Micropipette 10-100ml, 1pce	C	V	2	136,750	273,500	0.02	98.99
310	ISE CALIBRATOR(6x20ML+6X20ML)	C	E	2	135,000	270,000	0.02	99.01
311	Griseofulvine 125 mg cp	C	E	11,500	23	267,130	0.02	99.03
312	Miconazole crème	C	N	1,666	160	267,060	0.02	99.05
313	Dexamethasone Tabs 0.5mg B/1000	C	E	61,000	4	265,840	0.02	99.07
314	Papaverine 40mg/2ml inj	C	V	904	293	264,478	0.02	99.09
315	Phenobarbital 50mg, cp	C	E	37,000	7	259,000	0.02	99.11
316	Oxytocine inj. 10UI, IM	C	V	1,010	253	255,736	0.02	99.13
317	Quinine 300mg cp	C	E	30,100	8	253,021	0.02	99.15

318	ISE REFERENCE SOLUTION 1x500ML	C	E	4	62,540	250,160	0.02	99.17
319	TAMBOUR DE STERILISATION 190x150, 1	C	V	5	50,000	250,000	0.02	99.19
320	Dexamethasone 4mg/2ml inj	C	V	6,070	41	247,696	0.02	99.21
321	Acyclovir 200mg cp	C	E	12,580	19	244,112	0.02	99.23
322	Bisacodyl 5mg cp	C	N	35,200	7	231,998	0.02	99.25
323	Sparadrapp tissé 2cm*5m pce	C	V	579	395	228,705	0.02	99.26
324	Pethidine 50mg/ml 1ml amp inj	C	V	430	527	226,479	0.02	99.28
325	THERMOMETRE MURAL 1 PCE	C	E	15	15,000	225,000	0.02	99.30
326	Hydralazine 20mg inj	C	V	85	2,563	217,820	0.02	99.31
327	Eau Oxygenee 200ml	C	E	87	2,414	210,018	0.02	99.33
328	Albendazole Syrup 100mg/5ml 20ml	C	E	1,294	153	197,728	0.02	99.35
329	Film digital x-ray 25cmX30cm	C	E	176	1,093	192,280	0.01	99.36
330	Bassin reniforme en inox	C	E	10	19,200	192,000	0.01	99.37
331	HC Lyse 1L	C	V	2	90,000	180,000	0.01	99.39
332	Javel solution 5L	C	V	12	15,000	180,000	0.01	99.40
333	Lunette nasale pr Adult	C	V	235	737	173,232	0.01	99.42
334	Sonde Gastrique LEVIN UU CH 5	C	V	1,318	131	172,490	0.01	99.43
335	Lunette nasale pr Pediatrique (Child)	C	V	260	653	169,770	0.01	99.44
336	HYDROALCOHOLIC GEL 300ml	C	E	36	4,677	168,372	0.01	99.45
337	Phenytoine 100 mg tab	C	E	26,000	6	167,785	0.01	99.47
338	Bande platrée 10cm x 2.7m pce	C	V	628	258	162,130	0.01	99.48
339	ISE DILUENT 12x25ML	C	E	2	79,690	159,380	0.01	99.49
340	GAMMA GT PLUS SL 8X25ML	C	V	2	79,500	159,000	0.01	99.50
341	Metoclopramide 5mg/ml amp 2ml	C	V	2,925	54	158,760	0.01	99.52
342	Bande Crepe 10 cm* 4.5m pce	C	E	694	228	158,380	0.01	99.53
343	Violet de gentiane 2% fl de 1l	C	E	14	10,986	153,800	0.01	99.54
344	EE SYSTEM CLEANING SOLUTION 1 L	C	E	1	153,600	153,600	0.01	99.55
345	Cidezyme (Aniosyme) 5l	C	N	3	50,390	151,170	0.01	99.56
346	Métoclopramide à 10mg cp	C	E	48,000	3	149,096	0.01	99.57
347	Pyridoxine 50mg tab	C	E	17,300	9	148,340	0.01	99.59
348	Gel pour Echographie 250ml	C	V	210	672	141,200	0.01	99.60
349	Promethazine 25mg /ml inj 2ml amp	C	V	1,160	121	140,258	0.01	99.61
350	Atropine 1% collyre	C	E	115	1,189	136,750	0.01	99.62
351	Sulfadiazine 20gr cream	C	E	450	297	133,600	0.01	99.63
352	AMYLASE 6x20ml	C	E	1	126,000	126,000	0.01	99.64
353	Charbon activé 125mg cp	C	E	2,300	54	125,081	0.01	99.65
354	Aniosgel 1L	C	E	9	13,500	121,500	0.01	99.66
355	CLEANER+CONDITION 6X8ML	C	E	1	117,450	117,450	0.01	99.67
356	Adrenaline 1mg/ml, 1ml inj	C	V	1,590	71	112,252	0.01	99.67
357	Sonde d'aspiration CH 10	C	V	785	141	110,942	0.01	99.68
358	Catgut chrome dec 5(1),75cm PR 1/2C, 40m	C	V	28	3,888	108,850	0.01	99.69
359	Atenolol 50mg tab	C	E	10,900	10	104,420	0.01	99.70
360	Pince de kocher droite 16cm	C	E	20	5,200	104,000	0.01	99.71
361	Oxyde de zinc 50gr pde	C	N	163	613	99,940	0.01	99.72
362	Boite a Instrument 20x10x50cm	C	E	5	19,630	98,150	0.01	99.72
363	Pince hemostatique 16cm	C	E	20	4,775	95,500	0.01	99.73
364	Bilirubin D	C	E	1	90,450	90,450	0.01	99.74

365	Bilurbin T	C	E	1	90,450	90,450	0.01	99.74
366	Dopamine 200mg Inj	C	V	40	2,250	90,000	0.01	99.75
367	Glycerine 2.5L	C	N	3	29,833	89,500	0.01	99.76
368	Phenobarbutal 30mg cp	C	E	13,000	7	84,500	0.01	99.76
369	Mannitol 20% 100ml fl	C	V	56	1,504	84,200	0.01	99.77
370	Pissette en plastique 250ml	C	E	21	4,005	84,100	0.01	99.78
371	Specttinomycine 2g Powder Inject	C	V	27	3,019	81,500	0.01	99.78
372	Bicarbonate de Sodium pdre 50gr	C	N	294	273	80,374	0.01	99.79
373	Ciseau droit a bout mousse 16cm	C	E	10	7,800	78,000	0.01	99.80
374	Dicynone 250mg/2ml inj	C	V	128	600	76,800	0.01	99.80
375	Warfarin 5mg tab	C	E	1,500	50	75,645	0.01	99.81
376	Aiguille hypodermique,21G pce	C	V	6,100	12	74,490	0.01	99.81
377	Lames de bistouri No 23	C	V	2,100	34	71,715	0.01	99.82
378	TOTAL PROTEIN PLUS 12X20ML	C	E	1	70,200	70,200	0.01	99.82
379	Bupivacaine hyperbale 0.5mg/ml amp 4ml inj	C	V	100	700	70,000	0.01	99.83
380	Tube centrif.Plastic Gradueel, 1 pce	C	E	100	700	70,000	0.01	99.83
381	Stéthoscope médical	C	E	14	4,896	68,545	0.01	99.84
382	Pince Porte aiguille de Mayor-Hegar 16 cm	C	E	10	6,515	65,150	0.00	99.84
383	Pince Mosquito 12cm	C	E	10	6,320	63,200	0.00	99.85
384	Atenolol 25mg tab	C	E	2,850	21	60,990	0.00	99.85
385	Bandage Jersey tub 10cmX 25cm	C	E	3	18,241	54,722	0.00	99.86
386	Acide folique 5mg cp	C	E	23,000	2	53,088	0.00	99.86
387	SPECTINOMYCINE 2G POUUDRE +SOLVANT	C	E	15	3,500	52,500	0.00	99.87
388	Timolol 0.5% 5ML collyre	C	N	60	838	50,250	0.00	99.87
389	Ciseau courbe à bout mousse 16cm, 1 pce	C	E	10	5,000	50,000	0.00	99.87
390	Ciseau courbe à bout Mousse 18cm, 1 pce	C	E	10	5,000	50,000	0.00	99.88
391	Aniosgel 5L	C	E	1	49,500	49,500	0.00	99.88
392	Ciseau droit à bout Mousse 14cm	C	E	10	4,700	47,000	0.00	99.88
393	Seringue 50ml pce	C	E	200	230	46,000	0.00	99.89
394	Urea human 200ml Kit	C	E	2	23,000	46,000	0.00	99.89
395	Vitamine B Complex inj	C	V	550	81	44,400	0.00	99.90
396	Ecouvillons non steriles, bois,coton	C	E	135	323	43,540	0.00	99.90
397	Sonde Gastrique LEVIN UU CH 8	C	V	325	132	42,875	0.00	99.90
398	Suxamethonium 50mg/2ml inj	C	V	35	1,219	42,650	0.00	99.91
399	Sonde foley 2 voies sterile uu ch 14, pc	C	E	150	283	42,450	0.00	99.91
400	Vaseline blanche 250gr	C	E	44	953	41,950	0.00	99.91
401	Prednisolone 10mg ce	C	E	3,000	14	41,400	0.00	99.91
402	Neostigmine inj 0.5mg	C	V	40	1,026	41,050	0.00	99.92
403	Atropine sulfat 0.5mg/ml inj	C	V	488	81	39,635	0.00	99.92
404	Glycerine pure 1L	C	N	4	9,900	39,600	0.00	99.92
405	Fil 18x 24	C	E	100	386	38,612	0.00	99.93
406	Eau oxygenee 250ml	C	E	96	400	38,400	0.00	99.93
407	Phenytoine sodium 250mg/5ml inj	C	V	40	960	38,400	0.00	99.93
408	Violet de gentiane 500ml	C	E	8	4,800	38,400	0.00	99.94
409	Aiguilles à PL UU G25	C	V	125	304	38,050	0.00	99.94
410	Film Radiologie 18cm x 24cm, pce	C	E	100	355	35,453	0.00	99.94

411	Pissette en Plastique 500ml	C	E	10	3,500	35,000	0.00	99.94
412	Sonde vesicale de foley à 2 voies ch12 pce	C	V	100	340	34,000	0.00	99.95
413	Bupivacaine isobare 0.5mg/ml amp 4ml	C	V	65	500	32,500	0.00	99.95
414	Otoscope medical	C	E	2	16,100	32,200	0.00	99.95
415	Sonde Gastrique LEVIN UU CH 16	C	V	207	153	31,581	0.00	99.95
416	Sonde GAstrique levin UU CH 6 PC	C	V	119	257	30,564	0.00	99.96
417	Alcool Acetone 1l	C	E	2	14,000	28,000	0.00	99.96
418	Norfloxacin 400mg cp	C	E	1,000	27	27,169	0.00	99.96
419	Catheter court IV n°16 pce	C	V	200	135	27,000	0.00	99.96
420	Nifedipine 10mg cp	C	E	5,220	5	25,990	0.00	99.96
421	Seringues 60ml pce	C	V	110	228	25,060	0.00	99.97
422	Developer Film sol conc 20Ls	C	E	1	24,000	24,000	0.00	99.97
423	Lunette nasale(Infant) neonatale	C	V	25	900	22,500	0.00	99.97
424	Film radio dentaire 3.1cm x 4.1cm, 150pc	C	E	1	22,369	22,369	0.00	99.97
425	Sonde gastrique CH18	C	V	140	160	22,367	0.00	99.97
426	Aiguille hypodermique,23G	C	V	2,000	11	21,000	0.00	99.98
427	Gentamycine80mg/2ml 1 amp	C	V	700	30	20,800	0.00	99.98
428	BUPIVACAINE ISOBAR 0.5% 5MG/ML 10ML	C	V	50	400	19,980	0.00	99.98
429	Warfarin 2mg tab	C	E	500	38	19,105	0.00	99.98
430	Lidocaine 2% fl inj 20ml	C	V	50	367	18,367	0.00	99.98
431	Propranolol chlorhydrate 40mg cp	C	E	4,800	4	17,049	0.00	99.98
432	Quinine 300mg/MI Injection B/100	C	V	505	31	15,655	0.00	99.98
433	Autoclave Tape pce	C	E	4	3,900	15,600	0.00	99.98
434	Insuline Mixte 30/70	C	V	5	3,050	15,250	0.00	99.99
435	Collecteur pour aiguilles	C	E	14	1,083	15,167	0.00	99.99
436	Ferroplex sirop 100ml	C	E	50	300	15,000	0.00	99.99
437	BANDE PLATRE 20X2.7	C	E	30	473	14,190	0.00	99.99
438	Lame de bistouri n°20	C	V	601	23	13,823	0.00	99.99
439	Seringue 20ml pce	C	V	170	81	13,817	0.00	99.99
440	Chlorure de potassium (KCl) inj.	C	V	20	650	13,000	0.00	99.99
441	Clotrimazole 1% crème, 20g	C	N	60	195	11,700	0.00	99.99
442	Violet de gentiane usage ext.sol.FL 0.5l	C	E	2	4,800	9,600	0.00	99.99
443	Digoxine 0.250mg,cp	C	E	1,000	9	8,585	0.00	99.99
444	Thermomètre médical pce	C	E	17	500	8,500	0.00	100.00
445	Glycerine anhydre 1L	C	N	2	3,800	7,600	0.00	100.00
446	Sonde gastrique CH10	C	V	50	138	6,900	0.00	100.00
447	Alcool Methylated 1 L	C	E	2	3,417	6,834	0.00	100.00
448	Tube d'intubation No.6.5	C	V	9	660	5,940	0.00	100.00
449	Sonde d'aspiration uu ch 14	C	V	30	180	5,407	0.00	100.00
450	Naloxone 0.4MG/ML Amp inj	C	V	8	667	5,333	0.00	100.00
451	Gel Ecographique 1L	C	V	2	2,000	4,000	0.00	100.00
452	Endotracheal tube 6mm+pilot balloon	C	V	4	966	3,864	0.00	100.00
453	Sonde d'aspiration CH 16 pce	C	V	21	180	3,780	0.00	100.00
454	FORMOL 37% 1L	C	E	1	2,500	2,500	0.00	100.00
455	Sonde d'aspiration UU CH 12 pc	C	V	20	125	2,500	0.00	100.00
456	EAU OXYGENE Peroxyde d'hydrogène à 3%	C	E	7	280	1,960	0.00	100.00

457	Clotrimazole 1% 20gr creme	C	N	10	150	1,500	0.00	100.00
TOTAL						1,306,944,142	100.00	

Appendix III. List of products in category I in ABC-VEN analysis

Table 9: List of products in category I in ABC-VEN analysis

No	Item description	ABC	VEN	Quantity	Unit Cost	Total cost	%
1	Amoxycillin 500mg capsules	A	E	2,955,800	22	66,069,566	5.06
2	Examiantion gloves T 7.5	A	V	44,047	1,484	65,387,250	5.00
3	Gauz Roll 90cmx91m, 1.5 Kg	A	V	5,950	9,966	59,299,489	4.54
4	Amoxicillin 250mg capsules	A	E	2,896,000	11	31,558,633	2.41
5	Diclofenac suppo 100mg	A	E	499,695	55	27,650,627	2.12
6	Butylscopolamine 10mg tab	A	E	569,800	46	26,480,531	2.03
7	Nystatin 500000 UI tab	A	E	825,700	32	26,410,107	2.02
8	Cloxacilline 250mg capsules	A	E	1,738,000	14	25,160,126	1.93
9	Penicillin V 250mg tab	A	E	1,814,000	13	23,272,419	1.78
10	Sodium chloride 0,9% fl 500ml	A	V	53,651	420	22,509,941	1.72
11	Cromoglycate sodium eye drop	A	E	28,256	753	21,290,893	1.63
12	Amoxycillin 125mg/5ml syrup 100ml	A	E	61,065	323	19,743,355	1.51
13	Salbutamol spray 0.200mg	A	E	12,976	1,395	18,107,775	1.39
14	Campher Ointment 50g, tube	A	N	43,749	388	16,956,785	1.30
15	Erythromycin 250mg tab	A	E	779,000	22	16,840,748	1.29
16	Omeprazol 20 mg tab	A	E	1,589,300	10	15,893,684	1.22
17	Ibuprofen 200mg tab	A	E	3,165,000	5	15,637,688	1.20
18	Paracetamol 500mg tab	A	E	3,723,000	4	15,137,612	1.16
19	Nifedipin 20mg retard cp	A	E	1,427,900	11	15,080,827	1.15
20	Ibuprofen 400mg cp	A	E	1,466,000	10	14,472,425	1.11
21	Thiamine chlorhydrate 100mg Tab (Vit B1)	A	E	1,672,000	9	14,384,290	1.10
22	Metronidazol 250mg tab	A	E	3,118,000	5	14,231,309	1.09
23	Aluminium Hydroxyde Sirop	A	E	55,075	238	13,093,500	1.00
24	Ringer lactate flacon de 500ml	A	V	29,434	431	12,685,237	0.97
25	Amoxy+ clavulanic acid 625 cp	A	E	103,122	110	11,292,137	0.86
26	Lidocain 2% +epineph 1.8ml dent inj	A	V	42,650	263	11,207,146	0.86
27	RANITIDINE 150MG tab	A	E	27,300	406	11,072,040	0.85
28	Microscope slides 1 pce	A	V	159,968	63	10,138,500	0.78
29	Minigrip sacs, pce	A	E	2,077,600	5	9,970,336	0.76
30	Surgical gloves T 7.5 B/50 Pairs	A	V	1,884	5,218	9,830,873	0.75
31	POLYLACTIN 910 USP1, 1/2C 40MM	A	V	1,084	9,038	9,796,800	0.75
32	Paracetamol 120/5ml sp 100ml	A	E	40,352	242	9,772,473	0.75
33	Ciprofloxacin 500mg cp	A	E	429,700	22	9,517,400	0.73
34	Barrier Masks	A	V	20,000	460	9,200,000	0.70
35	Cotrimoxazole à 480mg cp	A	E	1,055,000	9	8,971,130	0.69
36	H.PYLORI 50tests	A	E	315	27,632	8,704,160	0.67
37	Valproate de sodium 300mg cp(depakine)	A	E	149,700	58	8,662,580	0.66
38	Iodine Polyvidone 10%, 200ml	A	V	7,470	1,157	8,642,790	0.66
39	Poch Pack 65x 9.0L+185ML	A	V	57	143,095	8,156,400	0.62
40	Captopril 25mg cp	A	E	906,500	9	8,049,229	0.62
41	Film radiologie 35cm x 35cm,pce	A	V	1,101	7,288	8,024,121	0.61
42	Insuline humaine 100UI/ml lente, inj	A	V	2,374	3,279	7,785,192	0.60

43	Valproate de sodium 500mg cp	A	E	69,700	109	7,618,934	0.58
44	Seringue de 10ml + aiguille 21 G plastic uu	A	V	176,983	43	7,564,465	0.58
45	Phenobarbital 100 mg cp	A	E	290,100	26	7,511,086	0.57
46	Sparadrap à oxyde de zinc 10CM X5M,pce	A	V	8,222	888	7,297,367	0.56
47	Vaccin anti rabique	A	V	1,220	5,777	7,048,041	0.54
48	Nystatine sp fl de 30ml	A	E	16,983	409	6,942,292	0.53
49	Fer sulf 200mg+ Acide folic 0.25mg cp	A	E	2,891,000	2	6,641,451	0.51
50	Beclomethasone spray 250mg	A	E	900	7,313	6,581,600	0.50
51	Glucometer test strip code free B/50	A	E	604	10,523	6,355,835	0.49
52	Rubella Test IgM/G,1pc	A	V	6,640	954	6,336,900	0.48
53	Insuline humaine 100UI/ml rapide, inj	A	V	1,807	3,391	6,127,209	0.47
54	Alcool denature 96% lliter	A	V	1,762	3,289	5,794,697	0.44
55	Glucosé 5% fl de 500ml	A	V	10,641	538	5,722,636	0.44
56	Methyldopa 250mg cp(aldomed)	A	E	197,501	29	5,699,024	0.44
57	Ceftriaxone 1g pdre inj	A	V	23,735	237	5,632,912	0.43
58	Eau pour Injection 10 ml	A	V	157,422	36	5,617,304	0.43
59	Indomethacine suppo 100mg	A	E	116,800	47	5,504,220	0.42
60	Benzyl benzoate 25% fl 1l	A	E	808	6,711	5,422,380	0.41
61	Acide ascorbique 500mg cp	A	E	601,000	9	5,309,024	0.41
62	Ampicilline inj 1g flacon	A	V	42,035	123	5,155,733	0.39
63	Erytromycine 125mg/ 5ml susp. fl de 100ml	A	E	10,734	475	5,100,777	0.39
64	Cefotaxime 1g pdre inj	A	V	17,100	291	4,973,000	0.38
65	Valproate de sodium 200 mg cp	A	E	75,512	65	4,912,484	0.38
66	CELL PACK 20 L	A	V	47	103,753	4,876,400	0.37
67	Ibuprofen syrup 100ml	A	E	16,879	288	4,866,898	0.37
68	HBsAg 50 tests	A	V	10,503	459	4,818,999	0.37
69	Tinidazole tab 500mg	A	E	328,100	14	4,747,173	0.36
70	Carbamazepine 200mg (tegretol)	A	E	337,300	14	4,734,430	0.36
71	Film radiologie 24cm X 30cm ,pce	A	V	1,002	4,707	4,716,080	0.36
72	TOXO RAPID TEST IgG/Igm 40Test	A	V	206	22,860	4,709,120	0.36
73	Salbutamol 500MicroG/ml amp. Inj	A	V	12,380	366	4,535,961	0.35
74	Tétracycline 1% opht.tube de 5g	A	E	33,416	136	4,532,870	0.35
75	Seringue de 5ml + aiguille 21 G plastic uu	A	V	163,600	28	4,512,364	0.35
76	Prednisolone 5mg cp	A	E	647,000	7	4,479,054	0.34
77	Paracetamol 250mg Suppo	A	E	81,410	54	4,391,444	0.34
78	Gant gynecologique sterile	A	V	7,550	578	4,363,924	0.33
79	Hydrochlorothiazide 25mg cp	A	E	862,000	5	4,245,945	0.32
80	Vitamine K inj	A	V	15,971	258	4,118,764	0.32
81	Chlorpheniramine 2mg sp 60ml	A	E	24,094	171	4,110,623	0.31
82	Métronidazole sirop 125mg/5ml fl de 100ml	A	E	14,387	285	4,093,649	0.31
83	Cimetidine 400 mg cp	A	E	336,000	12	4,024,017	0.31
84	Doxycycline 100mg cp	A	E	311,000	13	3,995,061	0.31
85	Cotrimoxazole à 240mg /5ml sp fl de100ml	A	E	15,122	264	3,985,401	0.30
86	Microcuvettes hb 201 B/200	A	V	20	199,167	3,983,333	0.30
87	Catheter court IV n°24 pce	A	V	37,459	106	3,980,503	0.30
88	Catgut chrome dec 3.5(2/0),PR 1/2C, 40MM	A	V	1,284	3,086	3,962,995	0.30

89	HCV 40 Test	A	V	394	9,938	3,915,480	0.30
90	Set de perfusion +aiguille pce	A	V	33,448	114	3,807,405	0.29
91	URINE TEST STRIP	B	V	499	7,312	3,648,585	0.28
92	CRP Latex And COntrOl 100 Test	B	V	304	11,464	3,484,913	0.27
93	Misoprostol (C ytotec) 0.2mg cp	B	V	9,108	377	3,438,246	0.26
94	Cloxacilline 500mg inj	B	V	24,000	139	3,337,469	0.26
95	Calcium gluconate Inj 10ml	B	V	7,465	420	3,138,164	0.24
96	Métronidazole 500mg 100ml inj	B	V	10,900	272	2,965,980	0.23
97	Stromatolyser 4 DL 2L	B	V	32	91,387	2,924,368	0.22
98	Bande de crêpe 10cm*4m 1 pce	B	V	13,315	213	2,838,006	0.22
99	Ampicilline 500 mg pdre inj,	B	V	31,885	88	2,800,460	0.21
100	Specimen container pr urine fl	B	V	32,200	86	2,756,000	0.21
101	Oxytocine inj. 10UI, IV	B	V	31,325	87	2,733,024	0.21
102	RPR 150tests	B	V	300	8,868	2,660,341	0.20
103	Catheter Court IV, UU G 18	B	V	24,215	105	2,532,960	0.19
104	Butylscopolamine 20mg/ml inj	B	V	13,629	182	2,482,270	0.19
105	Sulfolyser 500ml sln	B	V	18	115,578	2,080,400	0.16
106	TOXO RAPID TEST IGG/M B/25TESTS	B	V	76	27,242	2,070,400	0.16
107	Catheter court IV n°20 pce	B	V	20,192	102	2,066,158	0.16
108	Bupivacaine Isobar 0.5% 5mg/ml fl 20ml	B	V	533	3,815	2,033,600	0.16
109	Tensiomètre digital, pce	B	V	57	34,562	1,970,014	0.15
110	TOXO latex 100 TEST kit	B	V	69	28,007	1,932,500	0.15
111	Aiguille dentaire 27GB 1pce	B	V	33,105	57	1,874,866	0.14
112	Acétylsalicylate de lysine 0.9g/5ml amp	B	V	4,237	438	1,857,666	0.14
113	Seringue de 2ml + aiguille 23 G plastic uu pce	B	V	65,915	27	1,800,266	0.14
114	Fentanil 0.05mg/ml amp 2ml	B	V	660	2,680	1,768,650	0.14
115	Hydrocortisone 100mg/ml fl inj	B	V	6,806	258	1,755,446	0.13
116	Lamelles Couvre objet	B	V	293	5,926	1,736,446	0.13
117	Sonde vésicale de Foley 2 voies ch 16 pce	B	V	5,142	331	1,703,822	0.13
118	Serum antitetanique inj	B	V	660	2,464	1,626,000	0.12
119	Lidocaine 2% fl inj 30ml	B	V	5,970	266	1,588,902	0.12
120	Seringue a insuline 100 UI+aiguille 29G PCE	B	V	36,600	41	1,508,820	0.12
121	Stromatolyser 4 DS, 42ml	B	V	13	113,848	1,480,020	0.11
122	Diclofenac 25mg/ml inj amp de 3ml	B	V	32,023	46	1,476,959	0.11
123	Lancette stérile UU 200 pces	B	V	811	1,783	1,446,281	0.11
124	Bande plâtree 15cm x 2.7m	B	V	4,024	353	1,421,822	0.11
125	Test de grossesse pce	B	V	19,560	70	1,374,864	0.11
126	Glucosé 50% fl de 100ml	B	V	1,899	707	1,342,600	0.10
127	Cimetidine 100mg/ml 2ml inj.	B	V	8,910	150	1,335,776	0.10
128	Benzathine benzyl.penicilline 2,4MUI	B	V	7,218	183	1,320,318	0.10
129	Umbilical cord clamps sterile	B	V	20,756	63	1,305,057	0.10
130	Set de perfusion pediatrique	B	V	1,850	693	1,281,750	0.10
131	AST/GOT 4+1 SL 2x6.2ML	B	V	15	84,280	1,264,200	0.10
132	RHo(D) Immune Globulin inj	B	V	60	19,652	1,179,120	0.09
133	GRAM STAIN	B	V	56	20,750	1,161,972	0.09
134	Sterilizationa Air Sec 60l	B	V	1	1,119,000	1,119,000	0.09
135	GLUCOSE PAP SL 6x10ML	B	V	9	123,411	1,110,700	0.08

136	Lame de bistouris n° 22	B	V	30,612	35	1,083,490	0.08
137	Gentamicine 40mg /ml inj	B	V	24,620	44	1,076,665	0.08
138	HCV Ab Rapid test strip, 50test	B	V	100	10,664	1,066,400	0.08
139	Tube sec vacutainer 4ml B/100	B	V	201	5,190	1,043,120	0.08
140	Serum anti D (IgG IgM) Monoclonal 10ml 1 fl	B	V	275	3,758	1,033,375	0.08
141	RF Kit 100 Test	B	V	106	9,724	1,030,700	0.08
142	Furosemide 40mg cp	B	V	310,000	3	943,042	0.07
143	UREA UV SL 4X62.5ML	B	V	12	78,085	937,016	0.07
144	GLUCOSE 10% 250ML PERF	B	V	2,195	426	934,255	0.07
145	Haloperidol 5mg inj	B	V	793	1,162	921,805	0.07
146	Alcool denature 95%, 5l	B	V	81	11,142	902,471	0.07
147	Haemacell 30g/l fl 500ml	B	V	113	7,983	902,100	0.07
148	Dicynone 250 mg 1cp	C	V	7,000	121	848,450	0.06
149	Phenobarbital 100mg inj	C	V	1,312	645	846,450	0.06
150	Mosquito net white 1250x65x250 pce	C	V	190	4,450	845,500	0.06
151	Sac à Urine	C	V	4,311	194	837,299	0.06
152	Sonde vésicale de Foley 2 voies ch 18 pce	C	V	2,240	368	824,602	0.06
153	CREATININE JAFFE 2x125ML	C	V	10	82,395	823,950	0.06
154	Ephedrine 50mg/ml inj	C	V	2,580	294	757,450	0.06
155	Aiguille a PL 22 G 90MM	C	V	2,536	298	756,642	0.06
156	Huile à Immersion	C	V	84	8,749	734,922	0.06
157	Diazepan 5mg/ml amp inj. 2ml	C	V	1,790	394	705,875	0.05
158	Serum anti B Monoclonal 10ml 1 flacon Biotec	C	V	274	2,564	702,412	0.05
159	ALT/GPT 4+1SL 2x62.ML	C	V	12	55,000	660,000	0.05
160	Serum anti A Monoclonal 10ml 1 flacon Biotec	C	V	263	2,503	658,376	0.05
161	Human GPT KIT	C	V	18	35,540	639,720	0.05
162	Fil NR Synth 75cm PR N°1 1/2C 40mm B/12	C	V	268	2,348	629,351	0.05
163	URIC ACID MONO SL 6x50ML	C	V	5	123,300	616,500	0.05
164	Chloramphénicol inj 1g	C	V	2,216	277	614,763	0.05
165	Paracetamol 100mg/ml inj	C	V	550	1,036	570,000	0.04
166	Film Radiologie 35cm x 43cm, pce	C	V	600	910	546,200	0.04
167	R.P.R KIT 100 TEST	C	V	79	6,848	541,000	0.04
168	Violet de gentiane poudre 25g	C	V	76	7,074	537,600	0.04
169	Serum anti AB Monoclonal 10ml 1 flacon Biot	C	V	167	3,093	516,511	0.04
170	Magnesium sulfate 50% 10ml inj	C	V	879	586	515,100	0.04
171	Compresse paraffine 10x10cm(Tulle gras)	C	V	4,840	103	499,570	0.04
172	Morphine 10mg/ml, inj	C	V	980	484	474,608	0.04
173	Furosemide 10mg/ml 2ml inj	C	V	8,250	56	462,072	0.04
174	Aminophylline 25mg/ml amp de 10ml	C	V	4,670	98	459,785	0.04
175	Sparadrap perforé 18cmx5m pce	C	V	190	2,329	442,500	0.03
176	Glucose 10% 500ml	C	V	660	656	433,200	0.03
177	Chlorpromazine 50mg/2ml inj (Largactil)	C	V	2,480	171	423,687	0.03
178	Gel pour echographie 5 L	C	V	40	10,404	416,140	0.03
179	Haloperidol Decanoate inj	C	V	67	6,075	406,996	0.03
180	Sonde d'aspiration CH 8	C	V	2,584	147	380,390	0.03

181	Glucometer CODE free	C	V	39	9,667	377,000	0.03
182	Gauze Abdominal 45cmx45cm PCE	C	V	800	462	369,840	0.03
183	Human GOT KIT	C	V	11	32,500	357,500	0.03
184	ACID SOLUTION 1 L	C	V	4	88,721	354,882	0.03
185	Aiguille Poncti Lomb Luer 22G 90mm(spinal)	C	V	1,000	345	344,981	0.03
186	Ketamine 50MG/ML, FL 10ML inj	C	V	214	1,608	344,040	0.03
187	Alcool 70% 1 litter	C	V	40	8,511	340,433	0.03
188	Polyglactin no. 2/0 910 75cm B/12	C	V	36	9,300	334,800	0.03
189	Pénicilline Procaine 1mui+3mui fl	C	V	1,705	195	332,737	0.03
190	Halothane inhalation fl 250ml	C	V	10	33,064	330,642	0.03
191	HC Cleaner 1L	C	V	5	64,800	324,000	0.02
192	Tramadol hydrochloride 100mg/2ml, inj	C	V	1,470	214	314,148	0.02
193	Tube vacutainer EDTA 4ML B/100	C	V	65	4,793	311,550	0.02
194	Catheter Court IV, UU G22	C	V	2,670	116	309,766	0.02
195	Fil 30x 40	C	V	400	735	293,808	0.02
196	Micropipette 10-100ml, 1pce	C	V	2	136,750	273,500	0.02
197	Papaverine 40mg/2ml inj	C	V	904	293	264,478	0.02
198	Oxytocine inj.10UI, IM	C	V	1,010	253	255,736	0.02
199	TAMBOUR DE STERILISATION 190x150, 1	C	V	5	50,000	250,000	0.02
200	Dexamethasone 4mg/2ml inj	C	V	6,070	41	247,696	0.02
201	Sparadrap tissé 2cm*5m pce	C	V	579	395	228,705	0.02
202	Pethidine 50mg/ml 1ml amp inj	C	V	430	527	226,479	0.02
203	Hydralazine 20mg inj	C	V	85	2,563	217,820	0.02
204	HC Lyse 1L	C	V	2	90,000	180,000	0.01
205	Javel solution 5L	C	V	12	15,000	180,000	0.01
206	Lunette nasale pr Adult	C	V	235	737	173,232	0.01
207	Sonde Gastrique LEVIN UU CH 5	C	V	1,318	131	172,490	0.01
208	Lunette nasale pr Pédiatrique (Child)	C	V	260	653	169,770	0.01
209	Bande plâtrée 10cm x 2.7m pce	C	V	628	258	162,130	0.01
210	GAMMA GT PLUS SL 8X25ML	C	V	2	79,500	159,000	0.01
211	Metoclopramide 5mg/ml amp 2ml	C	V	2,925	54	158,760	0.01
212	Gel pour Echographie 250ml	C	V	210	672	141,200	0.01
213	Promethazine 25mg /ml inj 2ml amp	C	V	1,160	121	140,258	0.01
214	Adrenaline 1mg/ml, 1ml inj	C	V	1,590	71	112,252	0.01
215	Sonde d'aspiration CH 10	C	V	785	141	110,942	0.01
216	Catgut chrome dec 5(1),75cm PR 1/2C, 40m	C	V	28	3,888	108,850	0.01
217	Dopamine 200mg Inj	C	V	40	2,250	90,000	0.01
218	Mannitol 20% 100ml fl	C	V	56	1,504	84,200	0.01
219	SPECTTINOMYCINE 2G POWDER INJECT	C	V	27	3,019	81,500	0.01
220	Dicynone 250mg/2ml inj	C	V	128	600	76,800	0.01
221	Aiguille hypodermique,21G pce	C	V	6,100	12	74,490	0.01
222	Lames de bistouri No 23	C	V	2,100	34	71,715	0.01
223	Bupivacaine hyperbale 0.5mg/ml amp 4ml inj	C	V	100	700	70,000	0.01
224	Vitamine B Complex inj	C	V	550	81	44,400	0.00
225	Sonde Gastrique LEVIN UU CH 8	C	V	325	132	42,875	0.00
226	Suxamethonium 50mg/2ml inj	C	V	35	1,219	42,650	0.00
227	Neostigmine inj 0.5mg	C	V	40	1,026	41,050	0.00

228	Atropine sulfate 0.5mg/ml inj	C	V	488	81	39,635	0.00
229	Phenytoine sodium 250mg/5ml inj	C	V	40	960	38,400	0.00
230	Aiguilles à PL UU G25	C	V	125	304	38,050	0.00
231	Sonde vesicale de foley à 2 voies ch12 pce	C	V	100	340	34,000	0.00
232	Bupivacaine isobare 0.5mg/ml amp 4ml	C	V	65	500	32,500	0.00
233	Sonde Gastrique LEVIN UU CH 16	C	V	207	153	31,581	0.00
234	Sonde GAstrique levin UU CH 6 PC	C	V	119	257	30,564	0.00
235	Catheter court IV n°16 pce	C	V	200	135	27,000	0.00
236	Seringues 60ml pce	C	V	110	228	25,060	0.00
237	Lunette nasale(Infant) neonatale	C	V	25	900	22,500	0.00
238	Sonde gastrique CH18	C	V	140	160	22,367	0.00
239	Aiguille hypodermique,23G	C	V	2,000	11	21,000	0.00
240	Gentamycine80mg/2ml 1 amp	C	V	700	30	20,800	0.00
241	BUPIVACAINE ISOBAR 0.5% 5MG/ML 10ML	C	V	50	400	19,980	0.00
242	Lidocaine 2% fl inj 20ml	C	V	50	367	18,367	0.00
243	QUININE 300MG/ML INJECTION B/100	C	V	505	31	15,655	0.00
244	Insuline Mixte 30/70	C	V	5	3,050	15,250	0.00
245	Lame de bistouri n°20	C	V	601	23	13,823	0.00
246	Seringue 20ml pce	C	V	170	81	13,817	0.00
247	Chlorure de potassium (KCl) inj.	C	V	20	650	13,000	0.00
248	Sonde gastrique CH10	C	V	50	138	6,900	0.00
249	Tube d'intubation No.6.5	C	V	9	660	5,940	0.00
250	Sonde d'aspiration uu ch 14	C	V	30	180	5,407	0.00
251	Naloxone 0.4MG/ML Amp inj	C	V	8	667	5,333	0.00
252	Gel Ecographique 1L	C	V	2	2,000	4,000	0.00
253	Endotracheal tube 6mm+pilot balloon	C	V	4	966	3,864	0.00
254	Sonde d'aspiration CH 16 pce	C	V	21	180	3,780	0.00
255	Sonde d'aspiration UU CH 12 pc	C	V	20	125	2,500	0.00
TOTAL COST						1,148,486,802	87.88

Appendix IV. List of products in category II in ABC-VEN analysis

Table 10: List of medicines in category II in ABC-VEN analysis

No	Item description	ABC	VEN	Quantity	Unit Cost	Total Cost /Frw	%
1	Indomethacin gelules 25mg cp	B	E	953,000	4	3,509,380	0.27
2	Cloxacilline sp 125mg/5ml 100ml	B	E	10,564	331	3,496,266	0.27
3	Chlorhexidine 1,5 % +Cétrimide 15 % 1l	B	E	1,282	2,721	3,488,138	0.27
4	Vaseline blanche Pot de 1/2Kg	B	E	1,567	2,191	3,433,020	0.26
5	Solution physiologique gttés nasales 0.9%	B	N	9,409	353	3,323,032	0.25
6	Multivitamines sirop fl de 100ml	B	E	12,945	256	3,315,756	0.25
7	Diclofenac 50mg cp	B	E	1,275,000	3	3,310,135	0.25
8	Masque nez + Bouche (Facial)	B	E	36,724	90	3,299,460	0.25
9	Griséofulvine 500mg cp	B	E	66,700	48	3,175,939	0.24
10	Acétylsalicylique acide 500mg cp	B	E	735,000	4	3,133,992	0.24
11	Specimen container pr Selle	B	E	39,103	80	3,119,804	0.24
12	Paracetamol suppo 125 mg	B	E	61,405	50	3,094,058	0.24
13	S.R.O sachet 20.5 g pour 1l	B	E	47,111	64	2,998,403	0.23
14	Mebendazole sp 100mg/5ml fl de 30ml	B	E	14,801	191	2,828,368	0.22
15	Amoxy+ acide clavulanique 100mg/12.5mg/ml	B	E	1,367	1,978	2,703,359	0.21
16	Bétamethasone 0.1% 15gr creme	B	N	12,517	214	2,682,390	0.21
17	Levomepromazine 25mg cp	B	E	13,900	188	2,619,758	0.20
18	Spironolactone 25mg, cp	B	E	61,100	41	2,499,898	0.19
19	Coton hydrophile rl 500g,1 pce	B	E	1,580	1,577	2,491,965	0.19
20	Promethazine 5mg/ml sirop fl de 60ml	B	E	11,460	204	2,338,227	0.18
21	Chloramphénicol collyre à 0,5 % fl	B	E	11,936	192	2,292,175	0.18
22	Medical Infrared Thermometer	B	N	38	59,979	2,279,200	0.17
23	Valproate de sodium 200mg/ml, 100ml Syrup	B	E	437	5,140	2,246,000	0.17
24	Papaverine40mgcp	B	E	110,000	20	2,227,200	0.17
25	Ketoconazole crème 2% 15g	B	E	8,376	264	2,215,014	0.17
26	METFORMINE 500MG TAB B/100	B	E	200,900	11	2,154,130	0.16
27	Mebendazole 100mg cp	B	E	509,000	4	2,124,036	0.16
28	Aminophylline 100mg cp	B	E	611,000	3	2,116,656	0.16
29	Hydrochlorothiazide 50mg cp	B	E	373,000	6	2,115,242	0.16
30	Whitfield pommade tube de 50g	B	N	2,645	767	2,027,687	0.16
31	Albendazole 400mg Tabs B/100	B	E	64,700	31	1,989,005	0.15
32	Pyridoxine 100mg cp	B	E	137,000	14	1,928,000	0.15
33	Ciprofloxacine250mg cp	B	E	104,000	17	1,816,319	0.14
34	Aluminium Hydroxyde 500mg ces	B	E	549,000	3	1,794,523	0.14
35	Thiamine 50mg	B	E	248,000	7	1,731,644	0.13
36	Acide nalidixique 500mg cp	B	E	43,900	39	1,726,031	0.13
37	Nystatine 100 000 UI cp vaginal	B	E	71,972	24	1,695,308	0.13
38	Multivitamines cp	B	E	751,000	2	1,665,473	0.13
39	ASLO KIT 100 TEST	B	E	139	11,516	1,600,749	0.12
40	Zinc sulfate tablet 20MG B/100	B	E	174,200	9	1,599,994	0.12
41	Ketoconazole 200mg cp BTE B/ 1000	B	E	89,000	17	1,554,476	0.12
42	METFORMINE 850MG TAB B/1000	B	E	114,400	13	1,453,155	0.11

43	Tramadol 50mg,cp	B	E	91,800	16	1,425,749	0.11
44	SOLUTION HYDROALCOOLIQUE 5L	B	E	71	20,000	1,420,000	0.11
45	Vitamine B Complexe cp	B	E	938,000	1	1,405,275	0.11
46	Metronidazole ovule 500mg	B	E	17,100	79	1,353,825	0.10
47	Amitriptylline Hydro 25mg cp	B	E	331,000	4	1,222,261	0.09
48	Dexamethazone 0.1% collyre	B	N	3,590	337	1,208,514	0.09
49	Cimetidine 200 mg cp	B	E	206,000	6	1,165,729	0.09
50	BENZYL BENZOATE 100ML 25%	B	E	2,304	506	1,165,600	0.09
51	Cinnarizine 25mg cp	B	E	89,000	13	1,145,636	0.09
52	Chloramphénicol 250mg gel	B	N	61,000	19	1,130,211	0.09
53	Fer + Acide folique sp	B	E	490	2,249	1,102,188	0.08
54	Chlormpheniramine 4 mg ces	B	E	1,209,000	1	1,048,724	0.08
55	Haloperidol 5mg cp	B	E	166,300	6	1,044,881	0.08
56	Chloramphenicol gouttes otique 5%	B	E	3,620	268	970,417	0.07
57	Giemsa solution 0.5l	B	E	84	11,310	950,050	0.07
58	Dexamethazone+ Neomycine 2% Collyre	B	E	2,500	373	931,850	0.07
59	Amoldipine 10mg	B	E	62,000	15	919,600	0.07
60	Chlorpromazine 25 mg cp	B	E	238,000	4	914,322	0.07
61	Glibenclamide 5mg cp	B	E	337,000	3	901,465	0.07
62	Hydrocortisone cream 20gr 1%	B	N	3,089	286	883,795	0.07
63	Thermometre médical digital 1pce	C	E	205	4,113	843,150	0.06
64	Diazepam 5mg cp	C	E	69,020	12	813,912	0.06
65	Comprime d'eau de Javel 150gr, 100ces	C	E	4,805	151	723,823	0.06
66	Promethazine 25mg cp	C	E	206,500	3	711,719	0.05
67	Nystatine Ointment	C	E	365	1,937	707,133	0.05
68	Glass ionomer(GC Gold label) kit	C	E	10	66,050	660,500	0.05
69	Prednisolone 1% collyre	C	E	580	1,118	648,300	0.05
70	HC Eolyse 1L	C	E	6	101,167	607,000	0.05
71	Paracétamol 100mg cp	C	E	422,000	1	600,015	0.05
72	Comprime d'eau de javel 150g, 48pastilles	C	E	95	6,297	598,200	0.05
73	REVELATEUR FILM RADIO 20 LTRS	C	E	12	48,146	577,750	0.04
74	Magnesium trisilicate 550mg cp	C	E	260,000	2	575,385	0.04
75	Abaisse langue en bois pce	C	E	13,809	41	568,122	0.04
76	Acétylsalicylique acide 100mg cp	C	E	192,000	3	554,902	0.04
77	Biperdene 2 MG TAB	C	E	8,250	65	532,275	0.04
78	Promethazine 100ml sp	C	E	2,015	263	529,990	0.04
79	Salbutamol 4mg cp	C	E	380,000	1	502,583	0.04
80	EE SYSTEM SOLUTION 1 L	C	E	6	83,100	498,600	0.04
81	Clotrimazole 100mg, cp vaginal	C	E	10,182	48	485,084	0.04
82	ELITROL II 10x5ML	C	E	5	95,194	475,970	0.04
83	Cotrimoxazole à 120mg cp	C	E	122,000	4	469,537	0.04
84	ISE CONTROL I 10X5ML	C	E	3	145,600	436,800	0.03
85	Nitrofurantoin 100 MG CP	C	E	77,000	6	429,508	0.03
86	Aniosgel 500ml	C	E	50	8,500	425,000	0.03
87	HC BASOLYSE	C	E	4	105,250	421,000	0.03
88	Centrifugeuse electriquen220V	C	E	1	416,000	416,000	0.03
89	ELICAL 2-4X3ML	C	E	4	102,533	410,130	0.03
90	CHOLESTROL 6X100ML	C	E	1	406,760	406,760	0.03
91	ELITROL I 10x5ML	C	E	4	101,663	406,650	0.03
92	Morphine 10mg Tab	C	E	1,440	280	403,200	0.03

93	Pommade antihemorroïde pot de 30g	C	E	350	1,102	385,720	0.03
94	Cinnarizine 75 mg cp	C	E	14,000	27	381,450	0.03
95	Amalgame dentaire capsule	C	E	7	54,486	381,400	0.03
96	Fil 35 x 43	C	E	300	1,250	375,000	0.03
97	Gentamycine 0.3% 10ml collyre	C	E	2,283	161	367,443	0.03
98	Hydrocortisone collyre 5ml 1 %	C	E	780	438	341,710	0.03
99	Lactulose (Duphalac sol) 3.33gr/5ml	C	E	180	1,883	339,000	0.03
100	Atenolol 100mg	C	E	27,600	12	335,061	0.03
101	Prednisolone 0.5% collyre	C	E	240	1,351	324,210	0.02
102	Clomipramine 25mg cp (anafranil 25mg) cp	C	E	10,360	31	320,428	0.02
103	Ibuprofen sirop 60ml fl	C	E	1,160	270	313,200	0.02
104	EAU OXYGENEE 120ML	C	E	1,105	264	291,685	0.02
105	ISE CONTROL II 10X5ML	C	E	2	145,600	291,200	0.02
106	Fixateur Film Solution Concentree RX 20L	C	E	15	19,408	291,115	0.02
107	Film Radiologie 30 cmx 40cm,pce	C	E	400	727	290,943	0.02
108	Salbutamol sirop 100ml	C	E	1,042	263	274,010	0.02
109	ISE CALIBRATOR(6x20ML+6X20ML)	C	E	2	135,000	270,000	0.02
110	Griseofulvine 125 mg cp	C	E	11,500	23	267,130	0.02
111	Dexamethasone Tabs 0.5mg B/1000	C	E	61,000	4	265,840	0.02
112	Phenobarbital 50mg,cp	C	E	37,000	7	259,000	0.02
113	Quinine 300mg cp	C	E	30,100	8	253,021	0.02
114	ISE REFERENCE SOLUTION 1x500ML	C	E	4	62,540	250,160	0.02
115	Acyclovir 200mg cp	C	E	12,580	19	244,112	0.02
116	THERMOMETRE MURAL 1 PCE	C	E	15	15,000	225,000	0.02
117	Eau Oxygenee 200ml	C	E	87	2,414	210,018	0.02
118	Albendazole Syrup 100mg/5ml 20ml	C	E	1,294	153	197,728	0.02
119	Film digital x-ray 25cmX30cm	C	E	176	1,093	192,280	0.01
120	Bassin reniforme en inox	C	E	10	19,200	192,000	0.01
121	HYDROALCOHOLIC GEL 300ml	C	E	36	4,677	168,372	0.01
122	Phenytoine 100 mg tab	C	E	26,000	6	167,785	0.01
123	ISE DILUENT 12x25ML	C	E	2	79,690	159,380	0.01
124	Bande Crepe 10 cm* 4.5m pce	C	E	694	228	158,380	0.01
125	Violet de gentiane 2% fl de 1l	C	E	14	10,986	153,800	0.01
126	EE SYSTEM CLEANING SOLUTION 1 L	C	E	1	153,600	153,600	0.01
127	Métoclopramide à 10mg cp	C	E	48,000	3	149,096	0.01
128	Pyridoxine 50mg tab	C	E	17,300	9	148,340	0.01
129	Atropine 1% collyre	C	E	115	1,189	136,750	0.01
130	Sulfadiazine 20gr cream	C	E	450	297	133,600	0.01
131	AMYLASE 6x20ml	C	E	1	126,000	126,000	0.01
132	Charbon activé 125mg cp	C	E	2,300	54	125,081	0.01
133	Aniosgel 1L	C	E	9	13,500	121,500	0.01
134	CLEANER+CONDITION 6X8ML	C	E	1	117,450	117,450	0.01
135	Atenolol 50mg tab	C	E	10,900	10	104,420	0.01
136	Pince de kocher droite 16cm	C	E	20	5,200	104,000	0.01
137	Boite a Instrument 20x10x50cm	C	E	5	19,630	98,150	0.01
138	Pince hemostatique 16cm	C	E	20	4,775	95,500	0.01
139	Bilirubin D	C	E	1	90,450	90,450	0.01
140	Bilurbin T	C	E	1	90,450	90,450	0.01

141	Phenobarbutal 30mg cp	C	E	13,000	7	84,500	0.01
142	Pissette en plastique 250ml	C	E	21	4,005	84,100	0.01
143	Ciseau droit a bout mousse 16cm	C	E	10	7,800	78,000	0.01
144	Warfarin 5mg tab	C	E	1,500	50	75,645	0.01
145	TOTAL PROTEIN PLUS 12X20ML	C	E	1	70,200	70,200	0.01
146	Tube centrif.Plastic Gradueel, 1 pce	C	E	100	700	70,000	0.01
147	Stéthoscope médical	C	E	14	4,896	68,545	0.01
148	Pince Porte aiguille de Mayor-Hegar 16 cm	C	E	10	6,515	65,150	0.00
149	Pince Mosquito 12cm	C	E	10	6,320	63,200	0.00
150	Atenolol 25mg tab	C	E	2,850	21	60,990	0.00
151	Bandage Jersey tub 10cmX 25cm	C	E	3	18,241	54,722	0.00
152	Acide folique 5mg cp	C	E	23,000	2	53,088	0.00
153	SPECTINOMYCINE 2G POUVRE +SOLVANT	C	E	15	3,500	52,500	0.00
154	Ciseau courbe à bout mousse 16cm, 1 pce	C	E	10	5,000	50,000	0.00
155	Ciseau courbe à bout Mousse 18cm, 1 pce	C	E	10	5,000	50,000	0.00
156	Aniosgel 5L	C	E	1	49,500	49,500	0.00
157	Ciseau droit à bout Mousse 14cm	C	E	10	4,700	47,000	0.00
158	Seringue 50ml pce	C	E	200	230	46,000	0.00
159	Urea human 200ml Kit	C	E	2	23,000	46,000	0.00
160	Ecouvillons non steriles, bois,coton	C	E	135	323	43,540	0.00
161	Sonde foley 2 voies sterile uu ch 14, pc	C	E	150	283	42,450	0.00
162	Vaseline blanche 250gr	C	E	44	953	41,950	0.00
163	Prednisolone 10mg ce	C	E	3,000	14	41,400	0.00
164	Fil 18x 24	C	E	100	386	38,612	0.00
165	Eau oxygenee 250ml	C	E	96	400	38,400	0.00
166	Violet de gentiane 500ml	C	E	8	4,800	38,400	0.00
167	Film Radiologie 18cm x 24cm, pce	C	E	100	355	35,453	0.00
168	Pissette en Plastique 500ml	C	E	10	3,500	35,000	0.00
169	Otoscope medical	C	E	2	16,100	32,200	0.00
170	Alcool Acetone 1l	C	E	2	14,000	28,000	0.00
171	Norfloxacine 400mg cp	C	E	1,000	27	27,169	0.00
172	Nifedipine 10mg cp	C	E	5,220	5	25,990	0.00
173	Developer Film sol conc 20Ls	C	E	1	24,000	24,000	0.00
174	Film radio dentaire 3.1cm x 4.1cm, 150pc	C	E	1	22,369	22,369	0.00
175	Warfarin 2mg tab	C	E	500	38	19,105	0.00
176	Propranolol chlorhydrate 40mg cp	C	E	4,800	4	17,049	0.00
177	Autoclave Tape pce	C	E	4	3,900	15,600	0.00
178	Collecteur pour aiguilles	C	E	14	1,083	15,167	0.00
179	Ferropex sirop 100ml	C	E	50	300	15,000	0.00
180	BANDE PLATRE 20X2.7	C	E	30	473	14,190	0.00
181	Violet de gentiane usage ext.sol.FL 0.5l	C	E	2	4,800	9,600	0.00
182	Digoxine 0.250mg,cp	C	E	1,000	9	8,585	0.00
183	Thermomètre médical pce	C	E	17	500	8,500	0.00
184	Alcool Methylated 1 L	C	E	2	3,417	6,834	0.00
185	FORMOL 37% 1L	C	E	1	2,500	2,500	0.00
186	EAU OXYGENE Peroxyde d'hydrogène à 3%	C	E	7	280	1,960	0.00
TOTAL COST						154,512,583	11.82

Appendix V. List of products in category III in ABC-VEN analysis

Table 11: List of products in category III in ABC-VEN analysis

No	Item description	ABC	VEN	Quantity	Unit Cost	Total Cost / Frw	%
1	Whitfield 20gr pde	C	N	5,285	159	841,760	0.06
2	Pommade Camphre 100gr	C	N	980	750	735,000	0.06
3	Pommade ichtyiol 10% pot de 50g	C	N	463	1,342	621,443	0.05
4	Permanganate de potassium 500mg ce	C	N	8,550	51	435,861	0.03
5	SURFANIOS PREMIUM 1L	C	N	10	28,000	280,000	0.02
6	Miconazole crème	C	N	1,666	160	267,060	0.02
7	Bisacodyl 5mg cp	C	N	35,200	7	231,998	0.02
8	Cidezyme (Aniosyme) 5l	C	N	3	50,390	151,170	0.01
9	Oxyde de zinc 50gr pde	C	N	163	613	99,940	0.01
10	Glycerine 2.5L	C	N	3	29,833	89,500	0.01
11	Bicarbonate de Sodium pdre 50gr	C	N	294	273	80,374	0.01
12	Timolol 0.5% 5ML collyre	C	N	60	838	50,250	0.00
13	Glycerine pure 1L	C	N	4	9,900	39,600	0.00
14	Clotrimazole 1% crème, 20g	C	N	60	195	11,700	0.00
15	Glycerine anhydre 1L	C	N	2	3,800	7,600	0.00
16	Clotrimazole 1% 20gr creme	C	N	10	150	1,500	0.00
TOTAL COST						3,944,756	0.30