

Effective medicine control for Platinum Health Pharmacies

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ABSTRACT

Effective Medicine Control is the essence of pharmaceutical service delivery and of financial management in Platinum Health Pharmacies. Platinum Health Pharmacies implement medicine control measures to enhance and optimise service delivery. As Platinum Health Pharmacies deliver a pharmaceutical service as business associates of Anglo Platinum, it serves the same workforce. The requirement of the pharmaceutical service delivery for Anglo Platinum is timely, appropriate and available medicine.

Therefore, Platinum Health Pharmacies need to adhere to set criteria, those of “Good Pharmacy Practice in South Africa” as applied to the control, procurement and prescribing of medication. The ordering and receiving of necessary medication forms a significant part of the criteria, as this is the source of medication to pharmacies. The subsequent management of medication as inventory and control over recall, storage, excess and disposal of expired medication serves the same purpose. Effective dispensing and distribution methods are therefore mandated to ensure timeously availability of correct medication. Finally, the success of effective medicine control is defined by the accuracy of the stock take ascertaining the results of managerial methods of medication.

Platinum Health Pharmacies recorded an overall adherence level of 85 percent to the abovementioned criteria. This is a good indication of a strong, reliable and experienced pharmaceutical workforce that delivers an outstanding pharmaceutical service and is capable of maintaining effective medicine control.

Although few shortcomings were identified, it is nevertheless recommended that Platinum Health Pharmacies plan the improvement of their risk management plans, and identify quality improvement projects in areas of medicine procurement. The implementation of key performance indicators, relevant to stock control, is also recommended.

These, put into effect will assure optimisation of effective medicine control for Platinum Health Pharmacies, maintaining the benefits of cost containment and cost effective pharmaceutical service delivery.

Keywords: Operations, supply chain, quality.

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EFFECTIVE MEDICINE CONTROL FOR PLATINUM HEALTH PHARMACIES

CHAPTER 1

INTRODUCTION AND PROBLEM STATEMENT

1.1. Introduction

Medicine control plays a significant role in rendering a pharmaceutical service. The availability and quality of medication needs to be monitored constantly. This ensures the supply of high quality medication offered with cost-effectiveness relevant to the patient need. In turn, this allows for an improving public health as required by pharmaceutical ethics.

Effective medicine control is more critical than ever. Medicines need to be both safe and available at low cost. Medicine should also be made available where it is most needed (Karr, 2008:45).

The innovation of products, services and processes is crucial to every company's success. There is a growing demand and interest in the use of effective medicine control, for effective medicine control is characterised as one of the potentially viable means for promoting and sustaining corporate competitiveness.

Operations management and medicine control are both regarded as critical paths to competitive advantage, to improved performance and for success in organisations (Kuratko *et al.*, 2001:60-71).

Managing a modern supply chain involves specialists in manufacturing, purchasing and distribution (Jacobs *et al.*, 2009:1). The operations segment alone is complex and includes many managerial applications. Even the basic "control and logistics" applications for medicine control include the specialised areas of medicine management, institution maintenance, quality management and of product planning and control.

Medicine management includes those aspects which fall under effective stock control, such as prescribing medication, ordering medication and receiving the ordered items, managing medication in the pharmacy (including such vital areas as product recall, storage, excess and expired medication), dispensing, distribution and

stock take. Each of these processes requires constant management oversight, adaptation and updating in order to fulfil pharmaceutical managerial standards, as well as to simplify and enhance productivity and effectiveness.

Medication is controlled by the Medicines and Related Substances Control Act 101 of 1965.

This dissertation focuses on effective medicine control for Platinum Health Pharmacies.

1.2. Background to the study

Medicine Control is here defined as the method whereby medicine, or medical consumables, are obtained, stored and dispensed through the most cost-effective process. This process involves crucial decisions regarding lead times, stock turnover ratios, cheapest supplier, place and method of distribution. In particular, with respect to medicine, it is significant that the medication should be obtained through the most effective method and distributed with the same priority, acknowledging cost-effectiveness, while offering minimum risk and maximum benefit to the patient.

Operations and supply management is here defined as the design, operation, and improvement of the systems that create and deliver effective medicine control (Jacobs *et al.*, 2009:7). In the late 1950's and early 1960's, scholars began to deal specifically with operations management, as opposed to the separate disciplines of industrial engineering or operations research. Writers such as Edward Bowman and Robert Fetter (*Analysis for Production and Operations Management*, 1957) and Elwood S. Buffa (*Modern Production Management*, 1961) noted the commonality of problems faced by all production systems and emphasised the importance of viewing operations as a system (Jacobs *et al.*, 2009:14).

The motivation for this dissertation evolved from the experiences gained while working for companies that are subject to this issue and to the demands of effective medicine control to find sustainable opportunities to be more competitive and successful.

1.3. Problem statement

Studies on methods of improving operations and service have been conducted since the beginning of the twentieth century (Silbiger, 2008:256).

To improve the medicine control process, a number of initiatives have been, and still should be developed, jointly by health organisations.

Medical facilities depend on effective medicine control and upon strategies concerning medicine that offer minimum cost risk and maximum benefit for patients. These strategies include making decisions regarding sourcing the correct medications and products from suppliers, the delivery routes, expiration dates and order lead times, stock turnover ratios, together with the continuous availability of medication and available generics. This not only includes recording historical procurement data but also interpreting forecast data to maintain a balance with available medication.

Innovation is a pre-requisite for organisations seeking to remain competitive, particularly in uncertain or turbulent times. Many pharmaceutical and health organisations are looking more closely at effective medicine control as a way of combating lower standard medical service delivery, while still balancing the cost-risk factor. Due to competitiveness, globalisation, and of course, current global economic turmoil, companies in South Africa must find innovative ways to stay competitive and to remain successful. An entrepreneurial mindset is, at this stage, an asset.

In an effort to further available knowledge in this specialised area, this dissertation addresses the implementation of, and outcomes associated with, Effective Medicine Control. Much of the confusion often associated with the effectiveness of medicine control may be resolved by examining the internal organisational context.

The objective of this research is to diagnose the Effective Medicine Control Procedures relevant to the management of Platinum Health Pharmacies, in order to improve organisational performance and success. Relevant to this problem is the management of operations and processes. In particular, the research addresses the concept of operations management at Platinum Health Pharmacies.

1.4. Objectives of the study

1.4.1. Primary objective

The objective of this research is to help improve medicine control in Platinum Health Pharmacies, cost-effectively with minimum risk. In particular this research addresses the concept of the organisations medicine control capability.

1.4.2. Secondary objectives

Analysis of stock control and activities forms part of the research.

The objectives of this research are to;

- a. Review the current application of medicine control in Platinum Health Pharmacies,
- b. Indicate shortcomings of current strategies and emphasize the practical benefits to be derived from new definitions.

1.5. Scope of the study

The data was retrospectively obtained from employees within the Platinum Health organisation (Platinum Health Pharmacies). Respondents provided information on a variety of medicine control practices. This information proves invaluable in assessing medicine control.

The empirical research is based on a survey constituted of a questionnaire that was distributed to each participant.

The target respondents include pharmacists, assistants, managers and inventory managers of the Platinum Health Pharmacies.

1.6. Research methodology

This research, pertaining to the specific objectives, consists of two phases, namely a literature review and an empirical study.

1.6.1. *Literature review.*

The literature review serves the purpose of reviewing, perhaps discovering the necessary information to give the foundational knowledge needed to understand Medicine Control.

In the discussion, an overview of the definitions, characteristics, basic information, relevant significance and requirements is presented. This includes specific information (such as who carries the responsibilities for each criterion, where does each happen, what the process entails, when each criterion takes place and why). The discussion also includes a review on how each section takes place, the process that empowers it and the relevant significance of each on the pharmaceutical practice within Platinum Health Pharmacies.

Relevant research materials include:

- Internet Publications
- Magazines and Journals
- Organization pamphlets and news letters
- Organizational Statistics
- North West University Library

Relevant subjects addressed include:

- Management Statistics
- Management Economics
- Information Management
- Entrepreneurship
- Financial Management
- Operations Management

1.6.2. *Empirical study*

Here, the focus is placed on the analysis of the data obtained from the questionnaires distributed, and subsequently collected, during the research.

Research design

This empirical study consists of four phases (discussed in chapter 3 and 4), namely:

- The selection of measuring instruments
- Data analysis
- The report and discussion of the results of the empirical investigation; and
- Conclusions and recommendations based on the results of the empirical investigations.

This research project utilise descriptive research for data gathering. Jacobs (s.a.:6) define descriptive research as “the collection of data in order to state the current status of the subject or topic of study.”

The specific design that is used is the quantitative research approach.

Quantitative data research, which involves the use of statistical data and tools, is used to provide more precision when interpreting the data collected (Kuhn, 2009; Valentine, 2010).

Also primary data is used. Barker (2009) defines primary data as the collection of data by the researcher through questionnaires.

Primary data sought in order to answer the research questions that are required to be based on expert opinion. These opinions address issues on current trends and act as a basis upon which future medicine control can be founded.

By triangulating across the data sources, the researcher is able to ensure that the weaknesses of one method are compensated for by the strengths of the other method.

Participants

The empirical research is based on a survey constituted of a questionnaire that was given to each participant who are targeted respondents and include pharmacists, assistants, managers and inventory managers within Platinum Health Pharmacies – a Division of Anglo Platinum. The data was retrospectively obtained from these employees. These Pharmacies include competitive and innovative Pharmacies.

Information sought from respondents regarding a variety of medicine control practices. This information proves invaluable in assessing effective medicine control and operations management.

The researcher contacted the relevant participants to confirm their willingness to participate before proceeding with data collection. Each participant thereafter received a unique, but random number, to ensure confidentiality of information.

Measuring Instrument

The instrument utilised consists of a questionnaire. The first part seeks general information (biographical data) about the employee in the organization. This includes a respondent's institution name, telephone and fax numbers, institution address, position, formal education, number of employees (in the Pharmacy), age and gender.

The second part of the questionnaire seeks more focused information concerning medicine control in the pharmacies. This information determines a respondents view and evaluation of the effectiveness of their drug control system, including the recurrence of discrepancies and the availability of policies. The policies referred to here are those regarding interpretation of historical data for future control and methods of control.

Statistical Analysis

The data collected was statistically analyzed by the North West University (NWU) with the Statistical Program for Social Sciences (SPSS) (SPSS, 2009). Descriptive statistics (frequencies and percentages) is used to analyze the data.

1.7. Limitations of the study

There are a number of limitations imposed on the study. Most importantly, not all the distributed questionnaires was retrieved or fully completed. This might affect the validity of the data resulting. Secondly, the concept of Medicine Control is wide, thus interpretations of the terms used may vary, perhaps leading to questionable results. A particular problem with qualitative methods is that answers obtained from open questions are unstructured. This makes data analysis a difficult and time-consuming task, perhaps one open to subjective interpretation. Additionally, respondents too

may express their subjective views, introducing bias, and perhaps resulting in a higher margin of error (Bekkestua, 2003).

The findings of the study is also limited to the extent that the respondents are able to be honest, careful, and without bias when responding to the survey instrument.

1.8. Layout of the study

Terminology

ADR	-	Adverse Drug Reaction
CKS	-	Computerkit Systems
EOQ	-	Economic Order Quantity
FEFO	-	First Expired – First Out
FIFO	-	First In – First Out
GPP	-	Good Pharmacy Practice
HCR	-	Holder of Certificate of Registration
ICD 10	-	The International Statistical Classification of Diseases and Related Health Problems 10 th Revision
IMM	-	Interchangeable Multi-source Medicine
JIT	-	Just In Time ordering system
KPI	-	Key Performance Indicator
MCC	-	Medicines Control Council
NWU	-	North West University
QIP	-	Quality Improvement Procedure
SAPC	-	South African Pharmacy Council
SARS	-	South African Revenue Service
SPSS	-	Statistical Program for Social Sciences
ROL	-	Re-order Level

Definitions

From a pharmaceutical point of view, **lead time** is defined as the time period elapsed from the time of ordering medication up until it is received. In the sense of medication expiry, **lead time** may be described as the time remaining until the expiry date of the medication (Smith, 2010).

Schedule 6 medication is a drug classification of medication which has potential for dependency forming inclination and abuse. It is administered and prescribed in exclusive treatment regimes. This category of medication is maintained and prescribed under strict control as mandated by the Medicines and Related Substances Control Act 101 of 1965 (Anon, 2010a).

Chapter Division

The chapters in this mini-dissertation are presented as follows:

First, Chapter 1, the Introduction and Problem Statement are presented. Second, Chapter 2 discusses the requirements for effective medicine control. Next, Chapter 3 presents the results of the empirical study and finally, Chapter 4 offers the conclusions drawn from the research and make recommendations based on the researched information.

CHAPTER 2

REQUIREMENTS FOR EFFECTIVE MEDICINE CONTROL

2.1. Introduction

Effective medicine control needs the constant update of medicine control procedures relating to information concerning new medicine. It entails both operational effectiveness and financial management (Alvord, 2007:1).

The specific criterion which has been identified to be of significant value to Platinum Health's effective medicine control includes;

- Good Pharmacy Practice.
- Control over Medication.
- Medicine Procurement.
- Prescribing Medication.
- Medication Ordering and Receiving.
- Managing Medication in the Pharmacy with specific reference to Product Recall, Storage of Medication, Excess Stock and Expired Stock.
- Medication Dispensing.
- Distribution of Medication.
- Stock Take.

Each criterion is analyzed according to the requirements needed for effective medicine control. The relevant significance of each to Platinum Health is also discussed.

The discussion on each topic seeks to answer the following questions;

- What does the process entail?
- Where does this happen?

- Who carries the responsibility?
- When does the process take place?
- Why does the process take place?
- How does the process take place?
- What is the relevant significance of the criterion to Platinum Health Pharmacies?

2.2. Good Pharmacy Practice in South Africa

The Pharmaceutical industry of South Africa is obliged to commit to and adhere to the Good Pharmacy Practice (GPP) Guidelines as set out by the Pharmacy council of South Africa in delivering acceptable standards of service. Medication is controlled by the Medicines and Related Substances Control Act 101 of 1965. The Act obliges pharmacists to adhere to the legal requirements of the relevant Act. Pharmacists need to practice accordingly, implementing adherence to council directions, keeping a medicines register, the necessary registration of medicines and pharmacists, adherence to the code of ethics, to the legislation concerning medicine supply and handling, the control of medicines and related substances, licensing, generic substitution and to the pricing of medication. The legal standards and professional requirements are set to improve and uphold good pharmacy practice.

The Pharmacy Council of South Africa (SAPC) strives to uphold continuous professional development and optimal utilisation of the pharmacist's expertise as a profession, thus enhancing and maximising effectiveness of the pharmaceutical service delivery in South Africa (Putter & Hattingh, 1997:1). It is therefore required from every pharmacist to provide a high quality service, thereby endorsing SAPC's mission and vision of promoting excellence in practice for the benefit of public health. Continuous professional development has been implemented from the beginning of 2010, to encourage all pharmacists and assistants to enhance their practising knowledge and implementation skills. As the pharmaceutical sector requires dedication and a focus on improving medicinal treatment and enhancing patient health, there is a constant need for research and development in this sector. SAPC's underlying vision and philosophy sees "... pharmacy as a dynamic, information-driven, patient-oriented profession, through its infrastructure, competence and skills, (that) is committed to the health care needs of South Africa and its people by being the:

- a. Custodian of medicine;
- b. Formulator, manufacturer, distributor and controller of safe, effective and quality medicine." (Putter & Hattingh, 1997:2.)

Practising pharmacists are required to manage pharmacies and pharmaceutical services, to distribute the pharmaceuticals, to dispense the medication and to ensure quality of medicine and promote public health (Putter & Hattingh, 1997:3).

In effect, Good Pharmacy Practice (GPP) requires that there is a good supply and distribution of medicines, the provision of appropriate information and advice to patients while ensuring the quality use of medicine (Putter & Hattingh, 1997:4).

GPP requires that responsibility in the pharmaceutical service should be established to ensure that service delivery is readily available with adherence to good quality control, according to laid-down procedures. Proper dispensing, medicine control and procurement should take place with the minimum occurrence of errors. Medicine control should always be implemented with cost-efficiency, leading to the improvement of public health. Pharmacists are further required to take part in research studies to enhance the development of pharmaceutical service delivery and knowledge.

The Code of Ethics as set out by SAPC requires that pharmacists practice with the utmost respect and accountability, to honour their profession and obligation as set out by their oath at their graduation (Putter & Hattingh, 1997:7-9).

2.3. Control over Medicine

Controlling medicine inventory is of the utmost importance, particularly in the pharmaceutical sector (Shepard *et al.*, 2006:3). Medicine and its control, as part of a pharmaceutical service, are controlled by the Pharmacy Council of South Africa, the Medicines Control Council and are guided by the Medicines and Related Substances Control Act 101 of 1965. There is also significance to controlling inventory from an economic, political and management tool viewpoint.

1. *Economic Viewpoint:* Here, the financial aspect plays a major role. Stock-outs and even overstocking will have a definite financial implication for the cost-effectiveness of the pharmacy. If the pharmacy has overstocked and

cannot dispense the excess stock, there will be medication that has expired and is regarded as a loss. Also, lost opportunity costs exist where no revenue is earned on non-moving excess stock. If the pharmacy has a stock shortage, there is a possibility of descending reliability, which may result in clients seeking their pharmaceutical supplies elsewhere, that in turn, means lost future sales. Finally, administration costs are incurred with the ordering, monitoring of stock levels and processing of inventory (Anon, 2007b:4).

2. *Political Viewpoint:* It is the decision that has been made at a national level by government to supply certain medications at relatively low profit margins, that forces pharmacies to supply at diminished profit margins, hence probably decreasing the profitability of the pharmacy and ultimately therefore having implications for service delivery. There are certain aspects that come into play, for example, when a pandemic outbreak occurs, there need to be mass production of the required medication with accompanying massive increases in supply and availability of the medication. In effect, this will then be ruled as a priority for risk management and price-thresholds may be incorporated to enhance the availability of the medication to the public.
3. *Management Viewpoint:* There is significance in efficiently managing stock at a pharmaceutical facility, as this directly indicates the effectiveness of the management, also indicating implementation and adherence to standard operating procedures and policies. Effective stock management also highlights the effectiveness of the work force. As Platinum Health Pharmacies compete for the Pharmacy of the Year award, managers need to establish certain performance criteria against which the pharmacies may be measured to obtain nomination for this award. This award is also direct confirmation of the compensation for performance achieved. It further promotes good pharmacy practice in Platinum Health and enhances cost-effectiveness of the pharmacies. Examples of performance indicators include achieving budgets, good public feedback ratings and shortest stock-turnaround time (Breet, 1979:5-9).

Medicine control in pharmacies, described as stock control, enables the ability to monitor stock ordering, and the receiving and relevant quality-assurance of the products being handled. This includes a performance management system that, in effect, monitors the flow of stock. Platinum Health Pharmacies utilises the “Order Wise” software as an information and data processing system to obtain data concerning cost-effective ordering and deliverability. “Order Wise” is software utilised

for ordering medication in Platinum Health Pharmacies. It indicates the availability of medication, pack sizes, quantities, brand names, available suppliers and price. It notifies the relevant stock controller when a previous batch of medication was ordered. The dispensing departments of the pharmacies use Computerkit Systems (CKS) that provides software and hardware that assists the pharmacy personnel with dispensing, stock control and financial management. This system also provides a basis for decision-making, for forecasting usage and for budgeting and trends.

According to Good Pharmacy Practice, a pharmacist must be satisfied with both the supplier and with the source of the medication that is ordered. The supplier and source must both be reputable and must supply medication of the highest quality. The pharmacist must also be aware of, and must uphold standards for, storage conditions, labels, leaflets, appearance, origin and subsequent chain of supply (Putter & Hattingh, 1997:24).

Effective medicine control starts with the very basics of stock control. Platinum Health Pharmacies utilises the First Expired, First Out (FEFO) method, where stock that expires first must be distributed first (Jones, 2007:5). Effective stock rotation includes constantly monitoring the stock validity (expiry dates and quality) and also the effective rotation of stock to prevent any excess stock from expiring and to prevent shortage of medicine supply.

When stock is received, it should be checked for quality, quantity and for the time remaining until expiry, to ensure that the stock can be dispensed in the time remaining before it expires. The pharmacist takes responsibility for monitoring the expiry dates, stability and quality of products. If the pharmacist is suspicious of any medication, the doubt should be brought to the attention of the supplier or wholesaler and relevant steps taken to either prevent a similar occurrence or have the stock item replaced. Monitoring of the quality of stock needs to be done on a regular basis (preferably monthly). One simple method to check the expiry dates that is utilised by Platinum Health pharmacies is the regular dusting and cleaning of shelves and the medicine on them. Also, during stock-take, the expiry dates are checked. (Platinum Health, 2007b:1)

Under Regulation 27 of the Medicines Control Act of 1965, expired medicines may never be dispensed nor sold, but must be destroyed using the relevant procedures.

2.4. Medicine Procurement

The purpose of medicine procurement is to ensure that the medication is prescribed in a safe manner, is always available by ordering regularly, is stored properly and administered properly to patients. This includes making sure that medicine products are obtained, according to the correct policies and procedures, from licensed and trustworthy facilities and institutions (Ombaka, 2009:S23). The responsibility lies with the pharmacist to ensure that the correct amount and dosage form of medication of good quality is obtained from licensed facilities, and to ensure that no excess stock develops. It is the pharmacist's professional responsibility to exercise control over all medicinal and related products that are purchased or supplied. This responsibility includes the safe and correct dispensing of the medication, also the correct ordering procedures, according to good pharmacy practice. The pharmacist must know and select suppliers by applying various quality parameters, in accordance with the Medicine Control Council's (MCCs) standards of Good Manufacturing Practice. (South-Africa, 1965:1-31). A pharmacist may not purchase, sell or supply any medicinal product where the pharmacist has any reason to doubt its safety, quality or efficacy. CKS provides a facility to forecast future and cyclical needs and replenishments, based on historical usage.

The medication when received should be checked according to standard operating procedures for correct quality and quantity, and then stored according to storage specifications. Invoices and receipts must be controlled and filed in order to facilitate the necessary payments to the correct wholesalers or institutions. (Platinum Health, 2007e:1-2)

According to Platinum Health (2007e:1-2) the accounts payment schedule by the distributor or wholesaler is normally set at thirty days.

According to GPP guidelines, there should be adherence to the minimum standard requirements for medicine and pharmaceutical products when procuring, documenting, and storing and safely dispensing of medication to allow suitable lead-time for medication before expiry. These minimum requirements require that the pharmacist must be satisfied with the wholesaler and their method of delivery of suitable products, and the supplier must be registered with the authorities as a legal supplier of medicinal products and is capable of delivering quality products timeously. Specified storage conditions according to leaflets, pamphlets and labelling must be

adhered to (This includes the “FIRST EXPIRY – FIRST OUT” (FEFO) or “FIRST IN – FIRST OUT” (FIFO) stock rotation basis). In addition, the MCC registration number of the received products must be recorded. (South-Africa, 2008:44-45)

The pharmacist has the responsibility to ensure that the correct delivery of medicine directly to the pharmacy is made, that effective stock control and storage takes place, and that the relevant records are maintained. The responsible pharmacist is also held accountable for the implementation and updating of a relevant drug formulary and updating of new products, in co-operation with the Pharmaceutics and Drug Committee (PTC) of the institution, with appropriate cost-effectiveness (Ombaka, 2009:S21). Platinum Health Pharmacy orders are made using the “Order Wise” system, which includes the relevant order numbers and authorisation signatures. The storage of medicine is managed to acceptable standards and inspected regularly, thus ensuring that medicines and scheduled substances are stored and controlled in accordance with the pharmaceutical manufacturer’s requirements. These measures are also intended to assist in preventing stock-outs and expired stock. Platinum Health Pharmacies uses CKS as an inventory stock control system, and has established minimum, maximum stock and re-order levels. (South-Africa, 2008:53-56).

2.5. Prescribing of Medication

Prescribing medicine is defined as the process of diagnosing the clinical condition of the patient, evaluation of the level of health and current state of that patient and thereafter implementing pharmacological and physiological knowledge, based on medical therapy and prescription medication.

Prescribing medication is a joint effort by the doctor, nurse and pharmacist where the effectiveness of the drug therapy is largely assisted by each participant’s knowledge and practical application. Selection of the correct medication and the proper dosage methods contributes to successful prescribing. When the medical practitioner prescribes medication to a patient, the patients’ history should be consulted, together with consideration of any allergies, thereby avoiding any adverse events and ensuring effective prescribing. Cost-effective prescribing includes the implementation of the Platinum Health Medicine Formulary, as approved. The implication of the formulary is cost-related requiring that the generic or therapeutic

equivalent product be dispensed to the patient, so enhancing the medicinal effect and simultaneously decreasing costs (Rybacki, 2008).

Medication is prescribed by qualified medical doctors according to the diagnosis that is made for the specified patient. The scripts should contain all the relevant information needed by the pharmacist to correctly dispense the accurate medication and dosage. The script should consist of the date of prescribing, the institution name, contact details and address, medical practitioner detail and qualifications, the medication to be dispensed with correct dosage form and dosage regimen, the number of day's supply, and an ICD-10 code (The International Statistical Classification of Diseases and Related Health Problems, 10th Revision). The prescription should contain the full patient details with known allergies. Prescribing should implement the relevant formulary. The pharmacist should review the prescription for possible known drug-drug interactions and side effects, subsequently dispensing pharmaceutical and therapeutic generics in consultation with the doctor and with regard to patient authorisation.

According to **Annexure A** (Medicine Dispensing – Checklist), validation of the prescription should take place where the pharmacist checks if the prescription is complete, and legal and authentic. The prescription may be verified by telephone, fax or mail. (Pharmaceutical Society of New Zealand, 2004:1-5).

The relevant significance of prescribing medication in Platinum Health constitutes to the enhancement of public health and, in the case of Platinum Health, the workforce of Anglo Platinum. The organization can enhance the health of their workforce, by supplying their own Platinum Health Medical Services. By so doing, the workforce utilisation is optimised, health and safety in the workplace is increased, production is stimulated and so profits are increased.

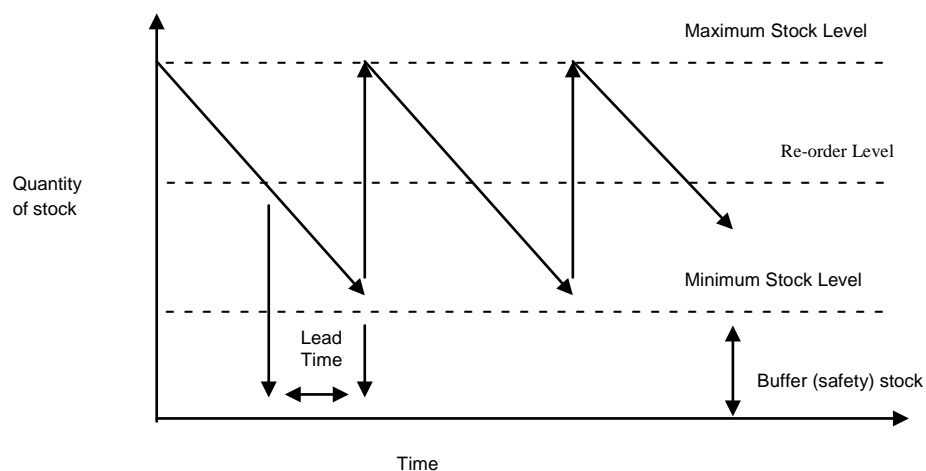
2.6. Ordering Medication and Receiving

2.6.1. Ordering Medication

Ordering medication is defined as the process whereby historical usage patterns regarding the replenishment of medication are transformed into future predictions of usage (Anon, 2009a:23). Data is interpreted and implemented to calculate the relevant minimum stock levels needed for constant medicine supply, with safety stock levels to meet unexpected demand and the maximum stock levels that may be kept to minimise excess stock and stock to be expired (Wind, 2003:1-2). According to Wind (2003:7), the steps needed for refilling replenished stock may be illustrated as follows;

Exhibit a – Stock Action Levels

Stock Action Levels



(Sources: Adapted from Anon, 2007b:6; Wind, 2003:7).

A new order should be placed as soon as the re-order level has been reached. The lead-time is the time period incurred from reordering to receiving the inventory (Anon, 2007b:6; Byrom, 2002:17).

Excess stock and expired stock represents a loss of income as it occupies space on the shelves where other products may be situated that may be needed, and also

because expired stock is written off as a loss, thereby causing unnecessary costs by purchasing stock that remains unused and must be subsequently destroyed.

The goal of ordering stock is to order as often as possible while incurring minimum costs, relevant to delivery and lead-time of supply. An ordering system should be in place to replace only daily usage of medication on the shelves. This presents the advantage of minimum period of stock turnover, maximum utilisation of minimum shelf space, less expired or excess and unused stock. Platinum Health utilises the Order Wise system, through which daily orders are placed directly at the facility to the wholesaler or supplier. The system also indicates stock-outs of the relevant products, previous ordering of medication to prevent double orders and therefore diminishes oversupply of any particular medicine. Order Wise also indicates the relevant pack sizes and dosage strengths. This is of significance to Platinum Health as each pharmacy facility utilises the Order Wise system and so receives the benefit of immediate ordering and medication supply to patients as soon as possible, while minimising lead time. Cost effectiveness is assured as each supplier on the system indicates their prices and so the cheapest relevant medication may be selected.

Each facility has a designated stock controller who implements policies and procedures. They are responsible for the overall stock replenishment and for preventing stock outs or excess stock. The responsible person makes sure that the shelves are checked regularly for stock requirements and that orders are placed as soon and as often as possible. When stock outs occur, the responsible person ensures that alternative methods are implemented to acquire the needed medication or therapeutic or generic equivalents. Medicine orders obviously need to take place as timeously and as accurately as possible, for there is a continuous requirement for medicine to be dispensed to patients of Platinum Health. The system entails that the patient receives the correct amount and dosage form of medication needed to either restore or maintain health, as soon as possible, to enhance and optimise Platinum Health's vision of health care for the new millennium.

The pharmacist accepts ultimate responsibility for the control over medication in the pharmacy. To maintain appropriate stock levels, ordering should take place on a daily basis. A minimum stock level should be kept on the shelves to ensure availability of medication on a continuing basis.

To ensure that all orders are based on accurate calculations / estimates of the order quantities and that requisition documents are correctly completed, orders should be placed by the responsible stock controller, pharmacist or post-basic pharmacist assistants.

The process of ordering medication is based on past consumption. It requires the calculation of the daily average consumption of each medication at the pharmacy. The daily demand will vary seasonally and in correlation to disease outbreaks.

The normal average daily consumption should be calculated using not less than six day's data.

- a. First, the daily average consumption data is calculated. Although the calculation can be performed manually, CKS as used by Platinum Health Services, does this automatically, thus minimising the possibility of arithmetical or human error.
- b. Each facility receives stock at least everyday. Therefore the relevant reorder factor should be equal to 1.
- c. Then the reorder level (ROL) is calculated for each medication in the pharmacy. The reorder level indicates when reorder of an item should take place, the quantity of units to be ordered and forecasts future replenishment over a certain period.
- d. Multiply the items' average daily consumption by the reorder factor. If there is a change in average daily consumption, a new reorder level should be calculated.
- e. Record the new reorder level. (Once again, CKS does this automatically, thus reducing the possibility of human error.)

(Free State Department of Health, 2007:1-3).

Placing an order requires the determination of when to order medication and how much of the medication to order. The relevant stock levels should be checked on a daily basis. If the reorder level is reached, an order for that medication should be placed. Ordering should only take place when the reorder level is reached to ensure efficient stock turnover levels. When the order is placed, the correct quantity should be ordered to maintain the average daily consumption stock levels. Relevant implications of seasonal diseases and disease outbreaks will alter the reorder levels and the reorder quantities and reorder levels should be adjusted accordingly.

To illustrate this concept, the following examples could be used;

Exhibit b – Re-order Point

Expected average daily consumption;

Monday	200
Tuesday	150
Wednesday	150
Thursday	200
Friday	300
Saturday	250
Total	1250

Number of days = 6

Therefore Average Daily Consumption = $1250 / 6 = 208$

- Expected ROL: If the facility orders once a day, the reorder factor is 1.
Reorder level = Reorder factor x Average daily consumption
Reorder level = 1×208
- When to order: Reorder level = 208
Stock balance = 250 - DO NOT ORDER
Stock balance = 208 - DO NOT ORDER
Stock balance = 190 - ORDER THE ROL = 208
Stock balance = 0 - ORDER THE ROL = 208

(Source: Adapted from Free State Department of Health, 2007:1-3).

According to Blackburn (2010:11), the relevant reorder point is calculated as:

Reorder Point = Average Usage per Unit x Lead Time + Safety Stock.

Exhibit c – Re-order Level

The reorder level may also be calculated by as in the following example;

Example 1

Maximum daily requirement	200 units
Time required to receiving medication	1 day
Average daily requirement	150 units

Calculation

Ordering point or re-order level = Ordering point or re-order level = maximum daily or weekly or monthly usage x lead time

$$\begin{aligned} &= 200 \text{ units} \quad \times \quad 1 \text{ day} \\ &= 200 \text{ units} \end{aligned}$$

(Source: Adapted from Anon, 2009b)

If there is a safety stock requirement for minimum stock that needs to be kept on the shelves as for example emergency medication, this should be added to the final answer of 200 units (Anon, 2009b).

2.6.2. Stock Receiving

Stock receiving serves the purpose of quantifying the medication received and controlling the amount of medication received according to the stock transfer form or invoice, the reporting of discrepancies and signing of any documentation with relevant information to conclude receipt of the goods and to confirm authorisation by the receiver (Jobert, 2002:1).

Ombaka (2009:S21) defines stock receiving as serving the purpose of controlling the quantity and quality of stock ordered, thereby keeping a constant supply of good quality products and that of effective stock control. A designated person at each Platinum Health Pharmacy is responsible for this task. They need to make sure that the medication received is of good quality and in the correct amount. Any discrepancy is reported according to standard operating procedure. This includes oversupply, damage and shortage of medication delivered. The person responsible

for receiving medication at the facility needs to ensure that the discrepancies are noted on a document included as **Annexure B**. If any package has been tampered with or damaged, it needs to be returned to the supplier for replacement or credit. On delivery of the goods, the responsible person needs to make sure that the invoice and delivery notes indicates the correct medication, the correct amounts, quantities and correct delivery address. This includes correct batch numbers, acceptable expiry dates, supplier name, invoice number, date and credits or changes to the order. The persons receiving the goods need to sign both the delivery note and the invoice to facilitate official auditing (Holloway *et al.*, 2006:84-98; Anon, 2008).

The receiving area should be separate from the pharmacy. Stock receiving requires the checking and implementing of correct standard operating procedures when receiving stock from suppliers. For example, the amount of boxes or containers received needs to correlate with the delivery note. This correlation must include correct quantity, quality, expiry dates and specified storage conditions. Any damaged containers or visual contamination must be recorded. All items needing refrigeration should be transported in cooler boxes and, when reaching the destination, need to be stored in a temperature-controlled refrigerator. Refrigerator items should be checked that they are still cold when received. The acceptance of any thermo-labile medication, if not packed in cooler boxes with icepacks, is prohibited. The acceptance of discoloured vaccines is also prohibited. Schedule 5 and 6 medications receive their own invoices and containers and should be labelled accordingly to warn that they are schedule 5 and 6 medications. Any discrepancies need to be recorded and brought under the attention of the responsible pharmacist and must be reported within 48 hours to the wholesaler or supplier for upliftment, replacement or credit, as appropriate (Anon, 2008).

Schedule 5 and 6 medication needs to be locked in a separate cupboard for safety reasons. All thermo-labile medication needs to be stored, according to their required storage conditions, in a temperature-regulated refrigerator. The normal temperatures of both the refrigerator and the pharmacy need to be monitored and recorded twice daily. The refrigerator temperature may vary between 2 degrees and 8 degrees Celsius, whereas the pharmacy should have a temperature below 25 degrees Celsius (Platinum Health, 2007g:1; South-Africa, 2008:38-39, 47, 178). Any variances from the required standards need to be recorded and brought to the attention of the responsible pharmacist.

Any medication with imminent expiry dates needs to be brought to the attention of the responsible pharmacist, who must then decide whether to return the medication to the wholesaler or supplier. Medication with an expiry date of shorter than three months must be accompanied with a letter (utilisation of short dated stock) from the supplier to make sure that the stock may be returned to the supplier for credit if not replenished. Depending on the decision taken, medication may be dispensed and utilised before expiry. Alternatively, acceptance of the delivery of medication with a short expiry date may be cancelled. Medication expiry dates must be documented as to make sure that they are replenished before their expiry date.

Schedule 1 to 6 medications must be stored in the dispensary with the necessary documentation and the appropriate registers completed, balanced and kept current. All received stock must be signed in and entered onto the required stock control system. As previously stated, Platinum Health utilizes CKS. Received stock must be unpacked and placed on the shelves as soon as possible. The shelves themselves need to adhere to the proper stock and inventory control system that every Platinum Health Pharmacy implements. This is known as the FIFO (First In - First Out) or FEFO (First Expired - First Out) methods. (Platinum Health, 2007g:1)

Some product requires special handling when received. It is of the utmost importance to control and maintain the cold chain with thermo-labile products. Cooler boxes must be returned to the supplier for future usage. Schedule 6 medications must be checked and locked away in the Schedule 6 medications cupboard or cabinet, and the relevant registers completed. Flammable gasses (narcotic gases) as well as methylated spirits must be stored in the fire store or cabinet at the back or outside the pharmacy. Relevant SARS certificates should be issued to the Platinum Health Pharmacies to permit the storage and dispensing thereof. Proper care and control must be exercised also over hazardous substances, such as caustic soda and insecticides that must be stored separately. (Platinum Health, 2007f:1)

The significance of stock receiving to Platinum Health Pharmacies is that it carries a major financial risk of medication that may be received incorrectly, receiving medication with short expiry dates which leads to excess stock and loss of valuable medication. This process needs to be controlled, as this is the foundational entry of the supply of medication to the pharmacies and its subsequent control. Quantities must be recorded accurately to enable the effective control of the medication

throughout the stock cycle until stock-take, where confirmation of stock levels takes place and missing stock is calculated and may be recorded. As Platinum Health Pharmacies delivers a pharmaceutical service, there needs to be a constant supply of medication available for dispensing, but with the financial imperative of containing costs. Therefore, the process of receiving stock need to be audited regularly and updated to prevent any discrepancies concerning the receiving of medication stocks or receiving incorrect medication.

2.7. Managing Medication in the Pharmacy

2.7.1. Product Recall

The Medicine Control Council is obliged to ensure the safety and efficacy of medication in South Africa. The Registrar of Medicines, the Director and Deputy Director, Inspectorate and Law Enforcement and the Medicines Control Officer(s) are responsible for the retrieval and withdrawal of any medication, if deemed unsatisfactory for dispensing purposes. Suppliers and Holders of Registration Certificates (HRC) carry the responsibility to inform the MCC whenever there is suspected medicine contamination or discrepancies. In terms of Section 19 (1) of the Medicine and Related Substances Act, Act 101 of 1965 – “No person shall sell any medicine unless it complies with the prescribed requirements. Any person who contravenes provision of this sub-section shall be guilty of an offence.” Also Regulation 43 (1) of The Medicines and Related Substances Control Act, Act 101 of 1965, “Every medicine shall comply with the standards and specifications which were furnished to the Council on the form prescribed by regulation 22 and which have been accepted by the Council with regard to such medicine.” (Hela, 2008:3-5.)

Product recall is defined as removing medication or retracting ineffective medication or medication that may not be fully compliant with MCC regulations. Normally, medication is recalled when it does not satisfy inspection and test standards which they are subjected to. All medication manufactured undergoes certain tests and procedures to make sure that they are dispensed at safe and effective dosages while adhering to maximum safety requirements. These tests include proper stability tests, concentration tests, storage tests and quantity and quality requirements. GPP requires that medication needs to adhere to and satisfy certain standards, and if not complying with the standards set, they may not be dispensed. This has implications

for the general public health and for the health of the Platinum Health workforce. Medication supply serves the purpose of enhancing public health.

All medication produced receives expiry dates that serve as the manufacturer's guarantee for the period during which the medication is effective and should not produce adverse effects. This is subject to the tests performed on the medication. At any given date after expiry, the medication is deemed unsuitable for dispensing and should be discarded. The medication is produced by pharmaceutical production companies and is produced in batches. This facilitates proper tracking and control of every medication produced (Jones, 2007:8). Producing medication in batches assists in delivering effective control over medication during the supply process. It entails despatching to wholesalers, and from there, along to the pharmacies. The medication is produced under certain conditions and therefore any particular batch will be produced under conditions pertaining to that batch. The production facility needs to adhere to certain standards of hygiene and of quality. Often, negative incidents may occur resulting in conditions that are not suitable for the production of medication. If this situation is assessed and the conclusion is reached that the conditions or production process was unsatisfactory, the medication concerned needs to be recalled or retracted from the pharmacies, wholesaler or suppliers. The medication would thereafter be subject to regulatory tests and the process must undergo an investigation that will decide on the reason for the unsatisfactory production circumstances. Production of the medication may thereafter continue with adherence to improved procedures and conditions.

Product recall serves the purpose of ensuring that all drugs and medical supplies are of good quality. Platinum Health pharmacies have a uniform procedure used in cases of recall or complaints.

The responsible pharmacist should comply immediately with any warning regarding recall or defective medication and must participate in any arrangements made for warning the profession of problems with medicines. The responsible pharmacist will inform the appropriate bodies of hazards that come to their attention. The warning may come from various sources such as a letter from the Holder of the Registration Certificate (HRC), from a newspaper report and electronic media announcement, perhaps from a TV broadcast informing the public, or from any other official notification. The information leaflet will contain the following information; the company identification letterhead, a heading containing the words “**Urgent**

Medicines Recall", the classification and type of recall, the name of product , dosage form, strength, the product registration number, pack size, batch number(s), and expiry date. The nature of defect, urgency of the matter, reason for recall, identification of health risk, and the procedure to be followed with the recall, together with follow-up communication information and contact addresses and telephone numbers will all be contained in the document (Hela, 2008:1-14).

When medication is recalled, the pharmacy must be checked for any medication with that particular batch number. If the batch under review is found, the medicine should be removed from the shelves immediately, placed in quarantine and marked appropriately as **"stock for a medicines recall"**. The containers should be inspected for any defaults, and the quality and quantity recorded of stock moved to quarantine. Further steps taken with these removed medicines must be according to the instructions issued by the HCR or Wholesaler, or other recognised body, for example, **"Return to supplier"**, or **"To be uplifted by recall"**.

In the event of an adverse drug reaction (ADR) report, the pharmacist responsible should issue an instruction for investigation of the complaint to a responsible person with the appropriate knowledge and experience to handle the event. The "Adverse drug event and product quality report form" (**Annexure C**) at the back of any South African Medicines Formulary (SAMF) will be completed by the pharmacist in charge and send to the following address:

Registrar of Medicines,
Medicines Control Council,
Department of Health,
Private Bag x828,
Pretoria.
0001

The reporting of the incident should be recorded and documented officially and the appropriate actions taken. In the event of a product recall, all efforts must be made to retrieve the medication, all dispensaries with the appropriate batch numbers must be contacted and the patients to whom the medication was issued must be contacted for the retrieval of the medication.

The responsible pharmacist at Platinum Health will make a warning of the recall and distribute copies thereof to the relevant clinics. It is the pharmacist's responsibility to ensure that the medication is returned to the supplier. The supplier needs either to give an appropriate credit or to replace the medication retrieved.

When the MCC issues a warning regarding a product recall, then no-one is allowed to dispense that medication until further notice. (Platinum Health, 2007d:1)

2.7.2. Storage of Medication

The storage of medication is critical in the sense that the medicine needs to be stored in a safe and clean environment that meets or exceeds GPP standards and each medication's own storage specifications (Anon, 2009a:24). This requirement is significant due to the fact that medication needs to be effective when dispensed and no defects must be incurred while transporting or storing medication (Lucas *et al.*, 2004:68).

Medication is very sensitive to environmental factors, as these decreases the stability of the medication and may influence its effectiveness. When the stability of medication is influenced, it may cause adverse effects when used by patients or otherwise administered.

As Platinum Health is an ethical health care service provider, the storage of medication is very important to ensure optimal service delivery and health care. When medication is not stored properly this may affect its' therapeutic effectiveness and shorten its validity. Medication also needs to be stored in an environment where only qualified pharmacists and authorised personnel have access to the drugs. This area is known as the dispensary.

All scheduled medication must be placed on shelves and not be stored on the ground. As already stated, thermo-labile items must be stored in fridges where the temperature must be recorded twice daily and the temperature inside the fridge maintained between two and eight degrees Celsius. The rest of the pharmacy must have a controlled temperature also recorded twice daily of lower than 25° Celsius (Carr, 1998; South-Africa, 2008:38-39, 47-48).

The cold-chain must be applied and implemented at all times to ensure the temperature control of the thermo-labile products. When thermo-labile products are transported or issued, they need to be put in fridge boxes with relevant cold packs. There may be no food or drinks in the medicine fridge, only vaccines and relevant medication, packed according to vaccine storage specifications (South-Africa, 2008:47-48).

Schedule 5 and 6 medication need to be stored in lockable cupboards, where only the pharmacist has access. Schedule 6 medication needs to be stored in a lockable cupboard where the key is kept either in a safe or by the pharmacist (South-Africa, 2008:178).

Methylated spirits and flammable products need to be stored in the inflammable store or cupboard at the back of the pharmacy. Of course, medication must be stored separately from cleaning products, dressings, vaculitres and flammable products or from any other substance that may lead to contamination or degradation of the medication.

The normal order of packing medication on shelves is alphabetically with the implementation of the FIFO and FEFO method (Sears, 2009:4). Expired medication or medication returned, for whatever reason, by a patient must be stored in containers specifically designed to be removed for destruction and clearly marked as such.

Where medication is packed in locations on the shelves known as bins, the shelves should also be clearly marked to facilitate the finding and storing of a product easier for location. Medication that is light sensitive must be stored in a dark room or in the correct brown or amber glass containers. In addition, the humidity in the pharmacy should be at a level not likely to affect any medication.

In general, medication should be stored in a cool, dry place, with minimum humid conditions not affecting the stability of the medicine. Moisture affects medication stability greatly, particularly if it is still in powder form. This often applies to antibiotics that are frequently kept in this manner to increase the duration of their effectiveness, that is, their validity, for when an antibiotic is dispensed it must be mixed with the proper amount of distilled water (Crichton, 2004:328-329).

The purpose of medicine storage specifications and procedures is to ensure that medication is securely and safely stored for maximum therapeutic effectiveness (Oishi, 2009:S37). Preferably, it should be stored away from other consumable goods and, where possible, in a large storeroom with proper security and control measures enhancing proper and effective stock control and rotation.

According to the GPP, storage areas should have sufficient shelving that must be hygienic, washable and able to keep the medication off the ground. Only authorised personnel and pharmacists are permitted to enter the storage areas or dispensary (Putter & Hattingh, 1997:41).

Holloway *et al.* (2006:7-9) also give that goods should be stored in appropriate areas according to the relevant requirements. These would include areas that are sanitary, secure, have appropriate temperature and ventilation, are free from damp and have good air circulation. Medication should always be stored according to the special circumstances where these are specified. Again, it needs to be noted that there must be dedicated stock rooms and proper refrigerator equipment for thermo-labile products.

2.7.3. *Excess Stock*

Excess stock has a major financial effect on the relevant Platinum Health Pharmacies. Excess stock not only takes up scarce shelf space, but also may expire, which causes a financial loss when the medication is not issued before the expiry date. Excess stock is directly associated with loss of profit. Only enough medication should be ordered to prevent stock-outs and to comply with minimum stock safety levels (Anon, 2010b). Any medication in the pharmacy in excess of these levels is characterised as excess stock that should be distributed to other pharmacies to prevent the expiration of the medication and subsequent loss. This distribution should be done as soon as the excess stock is identified. The correct batch number should be supplied with relevant detail, that is, the same detail given on an original invoice. All Platinum Health Pharmacies should be notified that these medications are available from the facility where it is in excess before ordering the same medication, thus incurring more costs, from the wholesalers or suppliers. Platinum Health tries to maintain the lowest possible stock turnover period for each facility. This implies the replacement of relevant stock daily as it is required. This not only keeps the shelves neat and tidy, but also provides enough space for the different

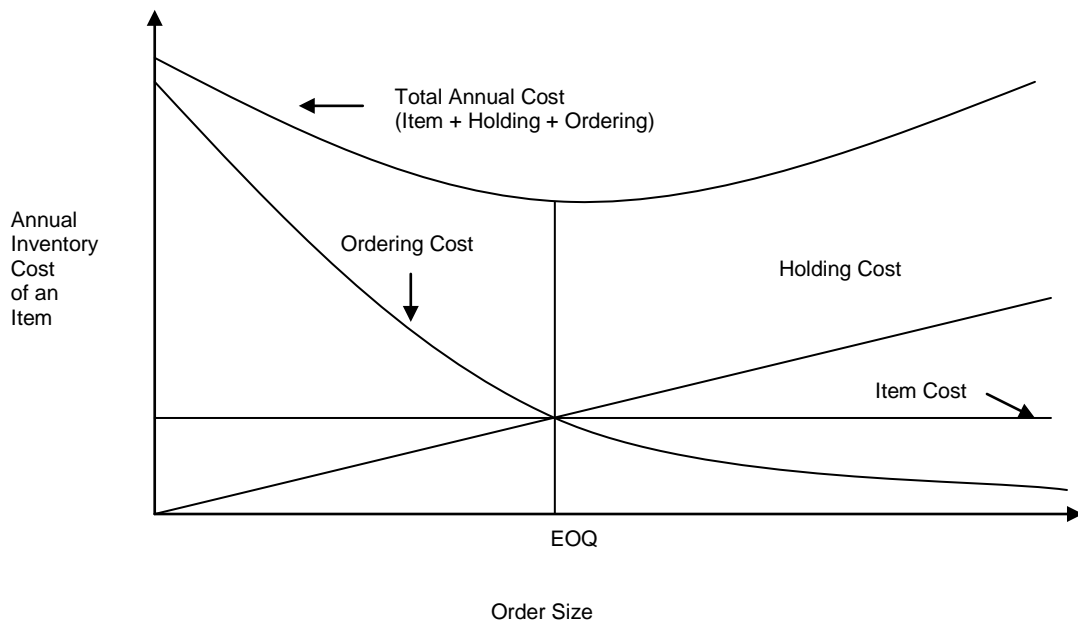
variants of available medication. It also prevents stock-outs and expiration of unused medication. A high stock turnover rate usually indicates good usage of a product whereas a low stock turnover rate perhaps indicates poor utilisation and the possible development of excess stock (Blackburn, 2010:12).

Excess stock significantly wastes space, which may be needed for other products that may be kept in the dispensary. It also implies that the pharmacy may be holding excess stock, and this has a direct financial implication. Pharmacies should rather utilise the Just in Time (JIT) system to obtain the correct level of stock needed daily. The Japanese are famous for use of this system. This system requires that stock is ordered at such a time that it will be received only as the current batch is exhausted. In the pharmacy, this will mean that medication that has been all issued today, needs to be replaced no later than tomorrow.

According to Silbiger (2008:271), the Balance of Ordering and Holding Inventory may be illustrated as follows:

Exhibit d – Economic Order Quantity Graph

The EOQ Graph



(Source: Adapted from Silbiger, 2008:271)

EOQ represents the Economic Order Quantity, which defines the amount of medication order with the relevant cost-effectiveness. The EOQ formula represents the balancing act for an ordering system, taking into account the order size and annual inventory cost of an item. As these factors increase, so do the accompanying expenses, even when taking into account that as the order size increases both the ordering costs and annual inventory cost of an item will almost certainly decrease. These lowered expenses are sometimes referred to, loosely, as “savings from buying in bulk”. Nevertheless, the holding cost will have a significant impact on this equation at a given point in time, at the point where depreciation takes place and expired stock costs increase, thus incurring unnecessary expenses. The point where this whole system is in balance is known as the Economic Order Quantity. This quantity varies for every Platinum Health Pharmacy. It is the responsibility of the pharmacist and stock controller at each facility to ensure that the optimal EOQ point is calculated.

According to Silbiger (2008:272), the EOQ formula may be defined as;

$$\text{Economic Order Quantity (Q*)} = \sqrt{(2 \times R \times O) / C}$$

Where:

Q* = Optimal inventory order quantity

R = Annual unit requirements (Demand)

O = Cost of placing an order

C = Cost of carrying a unit of inventory per period

The EOQ formula works on the demand level, which, up to a point, is quantifiable in the pharmaceutical industry. When demand fluctuates significantly over time, the EOQ formula itself has little significance (Silbiger, 2008:271-275).

The Economic Order Quantity model serves the purpose of determining the relevant quantities needed, and when that quantity should be ordered. These two factors play a deciding role in the relevant cost-effectiveness of the facility, as the ordering of medication necessarily leads to ordering costs, (administration costs incurred by placing an order and by receiving the inventory) and carry costs (costs incurred when inventory is not utilised and deemed as excess stock) (Blackburn, 2010:14).

2.7.4. Expired Stock

Goods must be stored in the pharmacy in such a way that they are protected from potentially harmful influences. Environmental factors may have direct implications for medication efficacy and stability, perhaps causing early expiry. (Platinum Health, 2007h:1)

The purpose of effective stock control is to rotate medication on a cost-effective basis, and so keep a continuous flow of medication in the pharmacy. The inventory turnover period needs to be as low as possible, while still facilitating minimum stock levels, reducing overstock and preventing stock-outs. When stock is ordered, the lead-time and date of expiry of the medication must be considered. Just enough stock needs to be ordered to make sure that the medication can be dispensed before it reaches its expiry date, for all expired medication must be removed from the pharmacy shelves and medical facility wards. New medication then needs to be ordered to replace the relevant expired medication.

Again, any expired medication has a direct financial implication for Platinum Health Pharmacies. Expired medication causes a financial loss that could have been prevented and so continuous monitoring is needed. When medication expires, it is deemed ineffective and unsuitable for either human or animal use. The company producing the medication puts the medication through a range of tests and procedures to determine the therapeutic efficacy and possible side effects of proper usage. The company also sets the exact expiry date for each batch as was determined during their test procedures. This serves the purpose of identifying the effective period of the medication for which the manufacturing company is responsible. The manufacturer will therefore guarantee the medication safety and level of potency up until the date of expiration. After the expiry date has been reached, the company deems the medication as ineffective and absolves itself of responsibility for any subsequent usage. When medication expires, it needs to be replaced by a new batch hence incurring costs for the new orders. In addition, the expired medication needs to be properly disposed of, thereby incurring disposal costs and leading to a shortfall of stock sales. The destruction of medication causes a two-fold financial loss to Platinum Health and therefore must be avoided at all costs.

Expired or contaminated medications may not be just thrown away or perhaps flushed down a toilet by the user, but should rather be taken to a pharmacy for proper

disposal. Expired medication is deemed as being dangerous and hazardous to the environment, therefore the proper procedures need to be implemented to prevent contaminating the landfill. (Ng, 2010)

The purpose of controlling expired stock is to ensure the timeous identification of expiry dates of items in stock, to ensure correct handling of expired stock and to dispose of stock in accordance with stipulated procedures. It is the responsibility of the pharmacist and the relevant stock controller to identify and meet the correct demands of medication needed for ordering. (DoH, 1994:15-16)

When receiving stock, the responsible person should check the medication for quantity, quality and any irregularities or contamination. Medication that is found not to be adhering to this standard must be reported to the pharmacist, and the supplier notified. Any suspect medication should be returned to the supplier for credit or an exchange of medication. If the non-conforming medication is found to be not the responsibility of the supplier, it needs to be quarantined for destruction according to the correct policies and procedures.

The person responsible for receiving medication at the facility needs to ensure that the batch numbers and expiry dates are noted, as on **Annexure D**. Medication with an expiry date of less than six months in the future needs to be monitored closely. The pharmacist should also monitor slow moving medication, so that relevant short dated or excess stock may be distributed to other facilities in need of medication. By so doing, the pharmacies do not incur further costs of ordering. The relevant medication should be formally transferred to the requisition site to be utilised before the date of expiry. Medicine not used timeously must be reported to the pharmacist immediately. It will then be decided whether the medication can be used or must be sent to another facility before the expiry date. If the medication can be used, but is slow-moving, the pharmacist must review the order level of that medication. If it is decided that the medication cannot be used, the pharmacist will not order it again. If there are any slow-moving items, the pharmacist will discuss the issue with the doctors to determine if these items can be used instead of others, optionally, the stock will be withdrawn from the shelves so the pharmacist can distribute it to other facilities or maybe exchange these slow-moving items for those with later expiry dates.

Expired medication needs to be recorded on the correct forms (see Annexure D and E). The recording must include the medication name, the reason for expiry, the quantity, quality and value of the stock. The documents then need to be signed by the person whom established the medication which expired, the person whom confirmed this, and finally, by the head of the department who will ultimately authorise disposal. The documentation register should be available for the Disposal Board Members and an officer of the South African Police Service Narcotic Division to sign. The relevant pharmacy needs to destroy and dispose of the medication according to policies and procedures. Scheduled medication may not be disposed of by any means other than by the contracted disposal company or incinerators at the facility. When disposing of medication, it needs to be supervised by the responsible pharmacist and relevant incinerator manager. Where the disposal of Schedule 6 and 7 medications take place, a member of the South African Police Service needs to be present. When utilising a company contracted to dispose of medication or using the facility incinerator, the expired stock needs to be recorded and stored in the correct containers, clearly marked and indicating that they contain expired stock that must be disposed of. Marking should include the words **“For Destruction”** or **“Return to Supplier”** or **“Do not use”**. These containers need to be placed in cupboards or a storeroom in the pharmacy kept separate for this purpose. A specific day must be selected to dispose of medication.

This is to ensure a procedure where the cost effective control of medicine is assured, that no patients' health will be placed at risk and that medicine that is going to expire if not used promptly can be distributed to other institutions before expiry date. Expired medicines are withdrawn from facilities to avoid its issue to patients and to ensure that expired medicine is destroyed in a legal manner offering no health risk to patients or to the pharmacy personnel.

Altschuler (2003) notes that, in the United States, legislation requires that the expiration date specifies only the manufacturer's guarantee for the full therapeutic efficiency and safety of the medication. This does not imply that the medication loses its efficacy or become unusable the day it expires. Medication can still be taken after date of expiry, although this is not advisable if full therapeutic potency is sought.

According to GPP Guidelines in South Africa (South-Africa, 2008:69), medication which are past their expiry dates may not be dispensed. It follows that when

medication is dispensed, the pharmacist must then ensure that the expiry date does not fall within the usage period of the medication.

2.8. Medication Dispensing

Hideo *et al.* (1995:167-176) note that good medicine control requires promptness in dispensing the correct and accurate dosage of a prescription.

Medication dispensing is the most significant part of the medicine control process of Platinum Health. Ultimately, it is the dispensing of medication that determines the quantity of medication needed to be kept on hand and available for dispensing. Medication needs to be dispensed in accordance with Good Pharmacy Practice and with legal requirements, to enable patients to determine how to use the medications as they were intended to be used. Medication dispensing is the responsibility of the pharmacist. **Annexure A** demonstrates one form of dispensing checklist to ensure all necessary steps are followed for successful dispensing. (Pharmaceutical Society of New Zealand, 2004:1-5)

According to the GPP Guidelines (South-Africa, 2008:59-67), the dispensing process is divided into three phases, namely;

1. Interpretation and evaluation of the prescription;
2. The preparation and labelling of the prescribed medicine; and
3. The provision of information and instructions to the patient to ensure the safe and effective use of the prescribed medicine.

In terms of Regulation 12 of the *Regulations relating to the practice of pharmacy*, a pharmacist assistant (post-basic) may, under the indirect supervision of a pharmacist, read and evaluate a prescription, compound the medication and advise the patient on taking medication safely and effectively. The prescription should be checked and signed for validity by a pharmacist. However, only a pharmacist may compound Schedule 6 medication (South-Africa, 2008:60).

Doctors at the Platinum Health facility will evaluate patients presenting themselves with a medical condition. A diagnosis is then made of the patient's condition through implementation of medical knowledge and the skills of medical practice. Subsequently, the doctor prescribes medication for the treatment of the relevant

condition. The pharmacist carries the responsibility of ensuring accurate dispensing, thus reflecting the intentions of the prescriber to improve the health of the patient (Pharmaceutical Society of Australia, 2006:43).

The pharmacist will receive a prescription, preferably within the patient file, which contains the patient medication and therapeutic history, allergies, physical health and appropriate test results. It is the responsibility of the pharmacist to evaluate and interpret the legality and validity of the prescription by checking for an authorised signature, medical practitioner details, institution details, date, correct patient information, diagnosis codes (ICD-10 code), and medication. The pharmacist must then evaluate the validity of the prescription according to the diagnosis code, patient medication history, allergies, drug interactions, contra-indications, therapeutic duplications and potential side effects. If the pharmacist is satisfied with the prescribed medication, the accuracy of the dosage regimens and number of days of supply must be validated. When the prescription is authorised as correct, the pharmacist must interpret the prescribed medication according to the Platinum Health Formulary, and must inform the patient of the benefits and implications of generic substitution. Generic substitution may only take place where a medicine has the same active ingredient, the same quantity of active ingredients and the same pharmaceutical dosage form. The pharmacist must not offer generic substitution if the prescriber has handwritten “**no substitution**” next to an interchangeable item, when the retail price of the generic offered is higher than that of the original medicine prescribed or the product has been declared “**non-substitutable**” by the authorities (MCC). When a patient is on chronic medication, the pharmacist must advise the patient not to use different generic medications but rather, as far as possible, to stay with the medication to which the patient is accustomed. Generic substitution should, as far as possible, be avoided where there are known contra-indications, drug-drug interactions, drug-patient interactions, severe adverse effects, abnormal bioavailability, or for critically ill patients and paediatrics. (Platinum Health, 2007c:1-2). In accordance with the *Health Professions Act, 1974*, a pharmacist shall dispense interchangeable multi-source medicine unless prohibited from doing so by the medical practitioner or patient. It is the patient’s choice to accept or decline generic substitution. When the patient chooses to decline generic substitution according to the formulary or when a specialist motivates that the original medication need to be dispensed, the patient should be notified that there will be a difference on the payment of medication which the patient must pay in order to receive the

prescribed medication. The patient should also be requested to countersign the medication or generic selected.

Karr (2000:3) notes that the purpose of the Platinum Health formulary is to provide guidelines for the use of cost-effective generic medication. Also, generic medication is manufactured to the same standards as the original medication and must adhere to the same standards of manufacturing, stability tests and levels of potency. Generic medication has exactly the same pharmacological efficiency as the original brand-name drugs. The reason why generic medication is cheaper is that the company manufacturing the generic drug does not incur unnecessary development and research costs for the drug. Therefore, they have the formula for manufacturing and so do not need to do further research for effectiveness, adverse effects and dosage efficacies. They also do not have to carry the marketing costs of new medication. As the original drug needed to be marketed to, first gain attention and thereafter to gain a reputable image of trustworthy medication, generic medication obtains very low-cost marketing through doctors and pharmacists advising patients to take the generic drug that is cheaper and just as efficacious. The original manufacturer is able to hold exclusive manufacturing rights for a period that depends on the patent rights. This period is normally twenty years. This means that the original manufacturer of the medication will be able to make and sell the medication exclusively under its own brand until the patent expires. Thereafter, other manufacturers may start to produce the same medication, but as a generic brand. This licensing period gives the original manufacturer the chance to retrieve the expenses incurred in research and development costs (Stoppler & Hecht, 2009).

Every patient has a unique situation and needs relevant treatment for their specific situation. This means that a specialist or doctor may ask that a patient be kept on the original medication, as there might be non-tolerance of other medication or related substances.

The Platinum Health formulary serves the purpose to enhance cost-effective health care. The formulary is constantly updated to include new medication releases. The pharmacist needs to communicate with the doctor and patient to obtain authority for substitution. The pharmacist thereafter needs to verify the indicated medication and availability for, if any medication is not available, it needs to be placed on order and substituted. The pharmacist is responsible to inform the medical practitioner of any stock-outs and refer the practitioner to generic and therapeutic substitution. The

pharmacist must then process the prescription as normal and gather the required medication. The medication need to be counted out in sterile counting trays, in the correct amounts, packed in sterile patient-friendly containers and labelled appropriately. Medication may under no circumstances be removed from its original packaging in order to conceal the potency and efficacy of the medication. The medication may however be removed from its original packaging when dispensing to individual patients, at the pharmacists discretion, to assist compliance. Medication returned to a pharmacy by a patient for whatever reason may under no circumstance be re-dispensed (Mohau District Hospital, 2009a;1-2; Oishi, 2009:S37).

In accordance with Regulation 8(4) of the General Regulations published in terms of the Medicines and Related Substances Control Act 101 of 1965, labels of medication containers need to contain the proprietary name or approved name of medication, the name of the dispenser, the name of pharmacy and contact details, the medication strength and correct dosage instructions, quantity, expiry date, date of dispensing and the prescription number. The pharmacist should also label containers with cautionary or advisory instructions. For final authority and validity, the dispenser must sign the prescription.

The medication should be handed over to the patient in a separate counselling area to assure confidentiality. The pharmacist is responsible to advise the patient on the manner of taking the medication and of any adverse effects. Necessary advice to enhance the efficiency of taking the medication and its storage should also be offered. The counselling should be done in a manner that the patient understands. The pharmacist should advise the patient concerning the disorder and its treatment and must state that any review date is very important. The patient should also be informed to report any adverse effects (Rybacki, 2008). The pharmacist should take extra care when the patient is illiterate or has some form of disability. It is the pharmacist's responsibility to make sure that either the patient or his/her caretaker fully understands the indications, usage and possible adverse effects of the prescribed medication (DoH, 1994:19).

Prescriptions need to be stored according to Regulation 11 of the General Regulations, published in terms of the Medicines and Related Substances Control Act 101 of 1965. Relevant information which needs to be stored includes the name of the dispenser, the patient name and address, the medical practitioner's name,

date of dispensing, the medication name, strength and dosage and reference number.

The prescriptions need to be stored and kept at the facility for at least five years. A computer system utilised by the facility needs to be able to adjust stock replenishment and to store patient medication history. The relevant registers (schedule registers) need to be completed and updated continuously. The registers also need to be balanced at least every three months (South-Africa, 2008:59-67).

The pharmacist must take due care when supplying medication to patients, particularly when supplying an excessive supply of drugs which may be abused. The pharmacist must also ensure that the correct medication and chemicals are dispensed for the correct indications. It is the pharmacist's responsibility to evaluate a person's history of medicine usage and the necessity for the required medication. This must be done before issuing medication to a patient. The pharmacist may control and limit the supply of medication to a patient, given a reasonable rationale. The pharmacist may also inquire of a patient or colleague concerning the misuse of medication and must advise them of the proper usage (Mohau District Hospital, 2009a:1-2).

2.9. Distribution of Medication

The distribution of medication serves the purpose of dispersing medication that either is dispensed or needs to reach a patient or medication with a limited expiry time that may be utilised before expiry at another facility (DoH, 1994:14). As discussed in the expired medication section, when medication has a short life expectancy or an early expiry date and the relevant facility where it is being stocked cannot use all of it before expiry, the pharmacist must contact the other facilities to seek requisitions from the facilities that may utilise this stock before ordering further stock from the supplier. This will prevent expiry of stock and the unnecessary ordering of new stock. In effect, this will save Platinum Health from a double financial burden.

Platinum Health uses its own transport system with appointed responsible delivery persons. The significance for Platinum Health of this method of distribution of medicine is that facilities may use the Platinum Health distribution system to disperse medication as the need arises. This gives Platinum Health freedom of medication distribution and replenishment. That is, it is cheaper to distribute medication using

Platinum Health's own transport system than it is to order new medication (Foster *et al.*, 2006). By using Platinum Health's own delivery system, patients also do not incur greater costs than are necessary to obtain medication, and so this system may be utilised as appropriate. Medication also has a lead-time, which might be incurred while waiting for authorisation, or packing. This too contributes to the need of a constantly available transport facility. The distribution system helps Platinum Health facilities to obtain needed medication as fast as possible and so avoid the lead-time necessary for supplier delivery. The rapid distribution of emergency medication is a further reason for the use of Platinum Health's own transport.

Each facility should have a delivery book and is required to submit the relevant documentation (transfer and requisition documents). The medication distributed needs to be sealed in a container with the relevant requisition and transfer documentation indicating quantity, batch numbers, requisition facility, distributing facility, contact numbers, date and time. The pharmacist is responsible for checking, authorising and signing for each parcel delivered to or removed from the facility. The authorised driver will pick up the medication, check the validity of the requisition and transfer documents and delivery time and distribute the medication on his delivery route. When delivering medication, the time, date, facility and person receiving the requisition need to be documented (Anon, 2010c).

Medication need to be delivered directly to the pharmacy. The person receiving the medication will check the delivery book and validate the facility delivery, quantity, quality and batch numbers of the delivery and then will authorise the delivery through signature (proof of delivery), time and date of delivery and name of delivery person. All medicines for delivery must be correctly packaged and parcels arranged to avoid spillage, breakage or any occurrences out of the ordinary with storage requirements, according to the Medicines Registration requirements, for example, light and temperature specifications (Anon, 2009a:24). During the delivery process, control must be exercised to ensure that the medicines are not subjected to unacceptable degrees of heat, cold, sunlight or to any other adverse influences during the transportation process (Lucas *et al.*, 2004:68). Should a courier service be used, all of the aforementioned conditions must still apply. Medicines prescribed for acute ailments must not be delivered by mail or courier service. The relevant documentation and delivery book need to be returned to original facility where it can be audited for correct delivery and receipt. Requisitions and transfers also need to be regularly scrutinised for discrepancies. Scheduled checks must be performed on

the data collected concerning deliveries to ensure compliance to requirements. (Platinum Health, 2007a:1)

The pharmacist carries the responsibility for issuing and distributing medication. Whenever medication stability or efficacy is in doubt, the pharmacist is not allowed to dispense or distribute it (Mohau District Hospital, 2009a:1-2).

To conclude the examination of the utilisation of the Platinum Health Pharmacy Delivery system, the financial aspect should be emphasised for not only do the patients receive treatment and medication faster and more efficiently than they would when needing to go back to the original pharmacy to collect medication, but overstocking is avoided. This is, of course, the point of JIT ordering. Nevertheless, forecasting is difficult and stock outs do occur and therefore provision must be made to obtain medication quickly and to deliver it to the patient or to the correct facility closest to the patient as quickly as possible. This, in effect, improves pharmaceutical service delivery and so optimises patient health (Anon, 2007a:8,18,56,68).

2.10. Stock Take

Stock-take is defined as the total inventory recording of all medicine and goods in the pharmacy facility (Jones, 2007:5). Stock-take is a quality control procedure. All handling and controlling of medication needs to be recorded and audited. As stock control has a financial impact on the economic viability of Platinum Health Pharmacies, it needs to be correct, efficient and satisfactory. Stock takes indicate any discrepancies which should be reported. These discrepancies must then be investigated, and quality improvement recommendations implemented to enhance efficiency and to reduce errors and deviations. Stock take should take place four times a year, preferably February, May, August and November. All Platinum Health Pharmacies should implement stock takes during the same period to gain an overall perspective of the value of operations. Stock-takes indicate the value of medicines and goods on hand and therefore determining stock turnover times and inventory quantities at different facilities. This also indicates the usage patterns of inventory at each facility. An overall view of the size of facility inventories indicates the budget needed for a forthcoming term and the number of staff needed to support facility operations.

The stock-take procedure must be managed in such a way that operations include quality improvement projects to minimise errors and potential mistakes when dispensing or when transferring inventory to patients and other facilities. Proper care should be taken when handling pharmacy inventory and the recording thereof as this is a main purpose of pharmacy practice. Stock levels need to be controlled effectively, through weekly mini-stock takes, where specific persons are responsible for specific shelves and for specific inventory in the pharmacy. Each person is held responsible for keeping minimum stock levels on their shelves, for preventing overstock and stock outs and for maintaining the correct inventory balance determined by historical data.

Suitable people are assigned specific shelves, as required by the Pharmacy Act, Act 53 of 1974, according to their specialities. The responsible person needs to ensure that the correct inventory is on the correct shelves, in the correct bins, and this should be correctly indicated on the mini-stock-take documents. This is necessary for forecasting future usage and requirements. Each person responsible receives a mini-stock-take list, that is, a blank list of the bins and shelves for which they are responsible. They need to count the quantity of inventory on their shelves and record it on the mini-stock-take documents. A “zero” must be recorded when there is no stock of an item. This completed document needs to be signed and checked for quality control purposes by a different person. The pharmacist is responsible for recording this information on to the system and needs to sign the documents for validity after data capturing has taken place. Mini-stock-takes should take place when there is no movement of inventory, preferably after hours, when the pharmacy is closed. All mini-stock-takes should occur at the same time, to avoid any discrepancies and to aid in improving accuracy. The purpose of the mini-stock-takes is to accurately indicate the current quantities of inventory in the facility as there may be variances caused by incorrect interpretation of invoices, or by errors in dispensing or transferring quantities of medication. Misappropriation, also, may be discovered (Sears, 2009:1-6).

The day before the official stock take, all expired medication should be removed from the shelves and the necessary adjustments made on the inventory program. The shelves should be stocked to ensure no missing inventory and to enable accurate counting. The shelves should be stocked in accordance with the FIFO or FEFO method. All items recorded need their official expiry dates and batch numbers to be recorded also (Mohau District Hospital, 2009b;1).

- The official stock take should be supervised by the financial auditor of the facility. This person should do spot checks, to establish both accuracy and validity.
- Every person responsible for bins receives a computer-generated printout (stock sheet) of the relevant stock quantities to be recorded, according to their assigned bins. These printouts should contain the details of bin number, location, date, product name, strength, dosage form, pack size, batch number, expiry date, theoretical quantity and quantity recorded.
- Stock counted should be recorded appropriately with relevant pack sizes, individual ampoules and loose tablets. All inventory and goods in the pharmacy must be counted and recorded. When a person is counting, that person should be assisted to count the inventory. This is to enhance accuracy and to check for errors.
- Everybody should start counting at the same time. All stock-take personnel should count alphabetically, according to their assigned bins.
- When the counting has finished, the inventory sheets or documents should be signed by both the person counting and by the person checking. Their names should also be printed on the stock sheets. The start time and finish time of the stock take should also be recorded.
- The pharmacist should establish that all documents are handed in and have been checked for correctness. The pharmacist should then interpret and feed the data into CKS, the inventory system. The pharmacist then needs to sign the documents as validation.
- The next step is to print the variances. These indicate discrepancies or errors, either as quantities or as financial variances. Where a variance is established, the inventory should be recounted to assure accuracy. If it is found that the variance is correct and valid, the reason for this variance needs to be established. The variance may be a shortage indicating financial and inventory loss, or it may be overstock where unnecessary cost are incurred. When there is a shortage indication, stock may have been lost or not properly documented. When there is overstock, inventory may have been ordered or received but also not completely documented.
- When the auditing of variances is complete, the stock-take is concluded and the inventory levels stored and documented. These documents should be sent to the financial department and Pharmaceutical Manager for scrutinizing and auditing. (Platinum Health, 2007i:1-2)

The financial and pharmaceutical managers will then evaluate the inventory levels and determine their validity. They will also be able to forecast the budget and personnel placements and future replenishment of inventory (Ombaka, 2009:S21).

2.11. Chapter Summary

In this chapter, an overview of the criterion for effective medicine control for Platinum Health Pharmacies was given. Each criterion was discussed with the different benchmarks for optimal medicine control. The known aspects of effective medicine control were discussed through the available literature, giving bases to what this study could be compared to. The relevant management of medicine control aspects for this study were reviewed. The next chapter contains the method and results of the empirical study.

CHAPTER 3

RESULTS OF EMPIRICAL STUDY

3.1. Introduction

This chapter comprises the presentation of the results of the empirical study, resulting from the distribution and collection of the questionnaire constructed from Chapter 2.

The literature study pertaining to Chapter 2 serves as the guideline for Effective Medicine Control for Platinum Health Pharmacies. Specific statements with specific significance to effective medicine control in Platinum Health Pharmacies were diagnosed and retrieved following the principles outlined in Chapter 2. These statements were then formulated as a questionnaire in which the participants of the study were to indicate the adherence of their facilities to the set criteria.

The data was retrospectively obtained from employees within Platinum Health Pharmacies – a Division of Anglo Platinum. These Pharmacies include competitive and innovative Pharmacies. Respondents provided information on a variety of medicine control practices. This information is useful in subsequently assessing the effectiveness of medicine control and of operations management.

Each participant was contacted to confirm their willingness to participate before proceeding with data collection. The respondents were first required to complete the relevant participant consent form (see **Annexure F**). Each participant was allocated a unique random number to ensure confidentiality of information.

The empirical research was based on a questionnaire that was given to each participant (see **Annexure G** - Effective Medicine Control - Questionnaire). The targeted respondents included pharmacists, assistants, pharmacy managers and inventory managers.

Platinum Health comprises of nine pharmacies. Twenty-three participants were asked to participate, and twenty participants returned completed questionnaires. Each of the nine pharmacies participated.

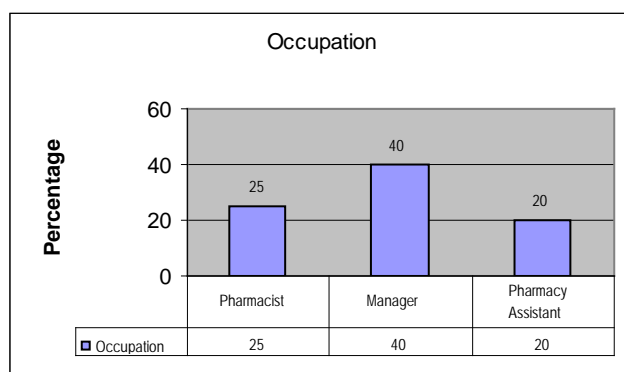
The data collected were statistically analyzed by the North West University (NWU) using the Statistical Program for Social Sciences (SPSS) (SPSS, 2009). Descriptive statistics (frequencies and percentages) were used to analyze the data.

The data were analysed according to the frequency of participants agreeing or not agreeing with the respective statements. The frequency was then represented as a percentage of the participants agreeing from the whole of the population studied. The relevant agreeing participants were thereafter represented graphically utilising histograms, (See **Annexure H**). It follows, therefore, that the participants not agreeing to statements are not indicated on the histograms but are presumed to form a part of the knowledge database.

The valid percentage indicates the percentage obtained using only results from the respondents that answered the relevant statement.

3.2. Biographical Data

Figure a – Occupation Distribution

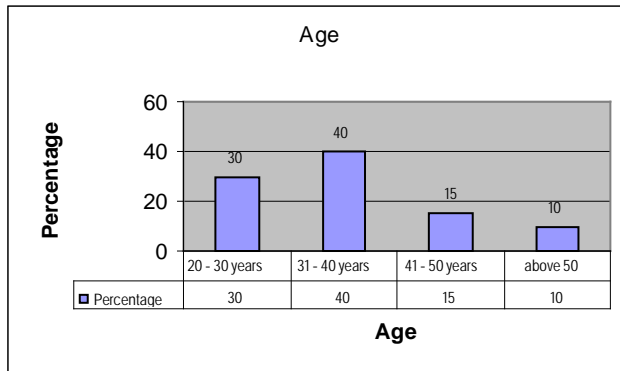


Graphical Representation; Platinum Health Pharmacy Statistics – Occupation Distribution.

The results from the questionnaires indicate that 25 percent of the respondents are pharmacists, 40 percent are managers and 20 percent are pharmacist assistants.

Three respondents did not complete this section. Thus, the largest percentage of participants consists of managers, so corroborating the legitimacy and validity of the responses extracted from the questionnaires.

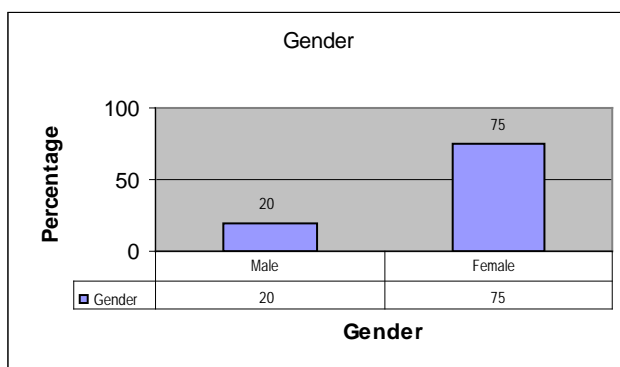
Figure b – Age Distribution



Graphical Representation; Platinum Health Pharmacy Statistics – Age Distribution.

The results from the questionnaires indicate that 30 percent of the respondents are between the age of 20 to 30 years, 40 percent are between the age of 31 to 40 years, 15 percent are between the age of 41 to 50 years and 10 percent are 50 years or older. One respondent omitted this section. The largest percentage of participants is between the ages of 31 to 40 years, indicating a relatively experienced workforce.

Figure c – Gender Distribution

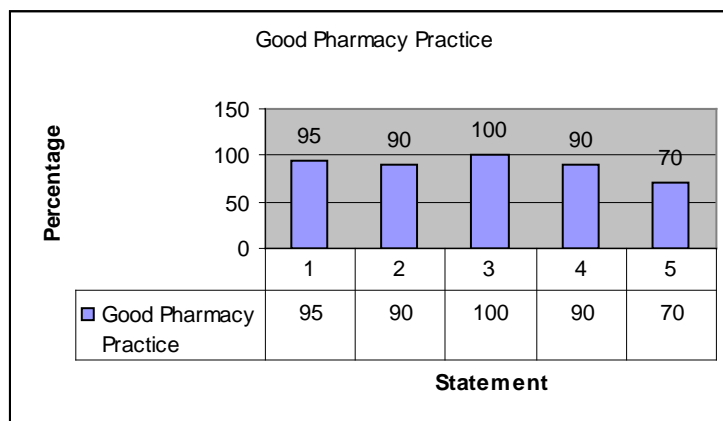


Graphical Representation; Platinum Health Pharmacy Statistics – Gender Distribution.

The results from the questionnaires indicate that 20 percent of the respondents are male with 75 percent being female. One respondent did not complete this section. By far the largest percentage of participants is female.

3.3. Good Pharmacy Practice in South Africa

Figure d – Good Pharmacy Practice



Graphical Representation; Platinum Health Pharmacy Statistics – Good Pharmacy Practice in South Africa. (Number 1 to 5 is the statements in the questionnaires that were completed by the respondents, with the relevant percentage adherence presented as histograms.)

From statements 1 to 5 (questionnaire) regarding Good Pharmacy Practice, it emerged;

1. That 95 percent of the respondent’s facilities possess a Good Pharmacy Practice Guideline;
2. That 90 percent of the respondent’s facilities possess Platinum Health Policies and Procedures;
3. That 100 percent of the respondent’s facilities implement these procedures;
4. That 90 percent of the respondent’s facilities has knowledge of the Medicines and Related Substances Control Act, Act 101 of 1965; and
5. That 70 percent of the respondent’s facilities implement some form of continuous professional development.

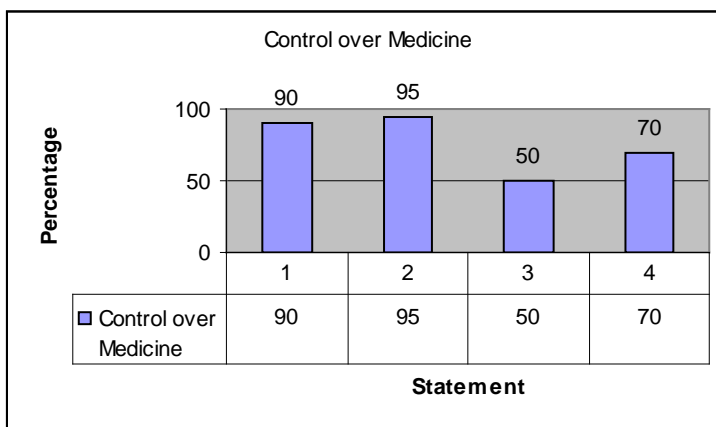
Platinum Health Pharmacies recorded an average of 89 percent adherence to the Good Pharmacy Practice in South Africa.

Empirical result pertaining open-ended questions and comments:

Effective medicine control requires adherence to GPP – Guidelines and Implementation. Respondents indicated that pharmacy assistants are not yet qualified, emphasising that this was often due to the difficulty of registration. Effective medicine control requires qualified and skilled staff.

3.4. Control over Medicine

Figure e – Control over Medicine



Graphical Representation; Platinum Health Pharmacy Statistics – Control over Medicine. (Numbers 1 to 4 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 4, concerning Control over Medicine, it emerged;

1. That 90 percent of the respondent’s facilities maintain minimum stock turnover times;
2. That 95 percent of the respondent’s facilities practice cost-effective Pharmaceutical Service delivery;
3. That 50 percent of the respondent’s facilities has a risk-management plan; and
4. That 70 percent of the respondent’s facilities utilise the public rating and feedback plan. (E.g. Ouch and Wow.)

Platinum Health Pharmacies responded with an average of 76 percent adherence to Control over Medicine. The outstanding statistic (outlier) with relevant significance

indicates that just 50 percent of the respondent's facilities have a risk management plan, for example, managing a pandemic outbreak. This statistic is noted as an area that needs improvement.

Empirical result pertaining open-ended questions and comments:

Proper financial control and the implementation of standard operating procedures over medication all lead to the profitability of the facility, thus enabling and improving effective medicine control.

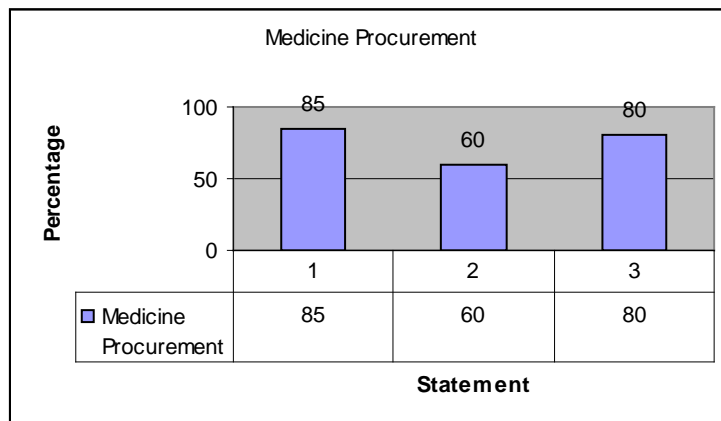
Respondents indicated several methods of cost-effective service delivery that were used, such as selecting the cheapest supplier when ordering, pre-packing of medication, generic substitution and implementation of the formulary, medicine exclusion categories, adherence to the specified chronic disease list and by limiting the amount of generic lines on the shelves.

None of the respondents indicated a facility risk-management plan. Respondents acquire information regarding various situations and thereafter react as effectively and as quickly as possible.

Cost-effective service delivery and proper medicine risk-management plans lead to effective medicine control.

3.5. Medicine Procurement

Figure f – Medicine Procurement



Graphical Representation; Platinum Health Pharmacy Statistics – Medicine Procurement. (Numbers 1 to 3 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 3 concerning Medicine Procurement, it emerged;

1. That 85 percent of the respondent's facilities implement quality control procedures. The valid percentage is 90 percent, as one respondent did not complete this statement;
2. That 60 percent of the respondent's facilities implement quality improvement procedures. The valid percentage is 63 percent, as one respondent did not complete this statement; and
3. That 80 percent of the respondent's facilities adhere to Good Pharmacy Practice Guidelines and minimum standard requirements for medicine and pharmaceutical products when procuring, documenting, and storing and safely dispensing medication.

Platinum Health Pharmacies responded with an average of 75 percent adherence to Medicine Procurement. The outstanding statistic (outlier) of significance indicates that only 60 percent of the respondent's facilities implement quality improvement procedures. This statistic is diagnosed as an area that needs improvement.

Empirical result pertaining open-ended questions and comments:

Respondents indicated relevant quality control procedures are used such as ordering from a reputable supplier, the regular checking of expiry dates, cold chain control, checking and signing of transactions, constant direct supervision by a pharmacist and application of Standard Operating Procedures, with regular audits using internal checklists. Feedbacks from these audits are being used to identify and shed light on problem areas that are then subject to quality improvement procedures. For example, Standard Operating Procedures need to be updated at least annually.

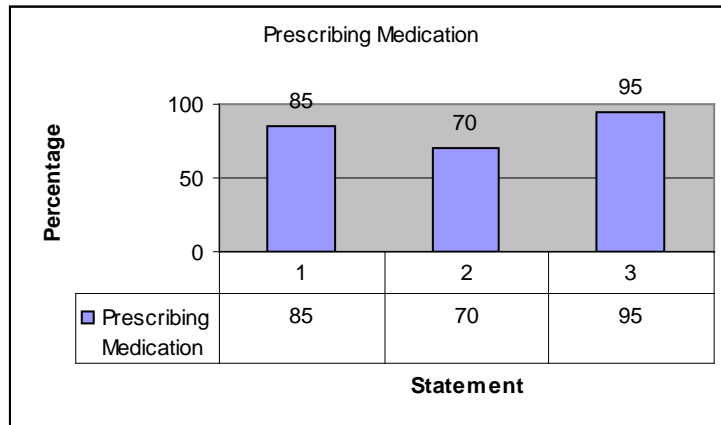
Respondents indicated the following as relevant quality improvement procedures:

- Undertaking weekly shelf checks; and
- Interpreting client feedback regarding service delivery.

Continuous quality improvement projects leads to effective development of medicine control procedures.

3.6. Prescribing of Medication

Figure g – Prescribing Medication



Graphical Representation; Platinum Health Pharmacy Statistics – Prescribing Medication. (Numbers 1 to 3 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 3, concerning Prescribing Medication, it emerged;

1. That 85 percent of the prescribers and prescriptions at the respondent's facilities conform to GPP standards;
2. That 70 percent of the respondent's facilities implements the ICD-10 list; and
3. That 95 percent of the respondent's facilities validate each prescription for completeness, legal requirements and authenticity.

Platinum Health Pharmacies responded with an average of 83 percent adherence to Prescribing Medication.

Empirical result pertaining open-ended questions and comments:

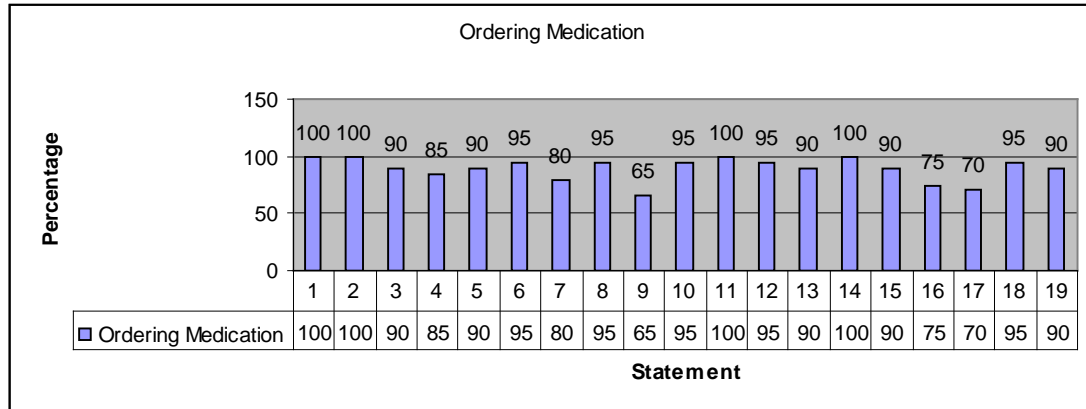
Respondents indicated utilisation of ICD 10 codes for effective medicine control, though prescribers do not fully adhere and prescribe from the code list. One respondent noted that the utilisation of the ICD 10 code list would terminate with effect from September 2010.

Proper utilisation of ICD 10 codes concludes that the correct medication is supplied for the indicated medical condition. This facilitates effective medicine control.

3.7. Ordering Medication and Receiving

3.7.1. Ordering Medication

Figure h – Ordering Medication



Graphical Representation; Platinum Health Pharmacy Statistics – Ordering Medication. (Numbers 1 to 19 is the statements in the questionnaire that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 19, concerning the Ordering of Medication, it emerged:

1. That 100 percent of the respondent’s facilities are ordering all medication required at time of purchase;
2. That 100 percent of the respondent’s facilities ensure that all medication needed is on the purchase order;
3. That 90 percent of the respondent’s facilities implement historical usage patterns to enable them to forecast purchase requirements;
4. That 85 percent of the respondent’s facilities have implemented an order book. The valid percentage is 90 percent, as one respondent did not complete this statement;
5. That 90 percent of the respondent’s facilities maintain minimum/safety stock levels;
6. That 95 percent of the respondent’s facilities maintain maximum stock levels;
7. That 80 percent of the respondent’s facilities maintain re-order levels;
8. That 95 percent of the respondent’s facilities order every day;

9. That 65 percent of the respondent's facilities implement the JIT (Just in Time) system. The valid percentage is 72 percent, as two respondents did not complete this statement;
10. That 95 percent of the respondent's facilities interpret historical data for forecasting quantities to order;
11. That 100 percent of the respondent's facilities order generic medication;
12. That 95 percent of the respondent's facilities select the most cost-effective supplier;
13. That 90 percent of the respondent's facilities implement historical purchase quantity;
14. That 100 percent of the respondent's facilities implement cost-effective medication purchase;
15. That 90 percent of the respondent's facilities implement selection of cheapest generic ordering;
16. That 75 percent of the respondent's facilities maintain the lowest possible stock-turnover periods. The valid percentage is 80 percent, as one respondent did not complete this statement;
17. That 70 percent of the respondent's facilities maintain previous day medication replenishment. The valid percentage is 74 percent, as one respondent did not complete this statement;
18. That 95 percent of the respondent's facilities prevent duplicate ordering. The valid percentage is 100 percent, as one respondent did not complete this statement; and
19. That 90 percent of the respondent's facilities have a responsible person for ordering daily. The valid percentage is 95 percent, as one respondent did not complete this statement.

Platinum Health Pharmacies responded with an average of 89 percent adherence to Ordering Medication. The outstanding statistic (outlier) indicates that only 65 percent of the respondent facilities implement the JIT (Just in Time) system. This is diagnosed as an area that needs improvement.

Empirical result pertaining open-ended questions and comments:

Respondents indicated that:

- Inventory levels on the computer program and inventory are physically checked for minimum levels to determine the needed re-order of the relevant stock;

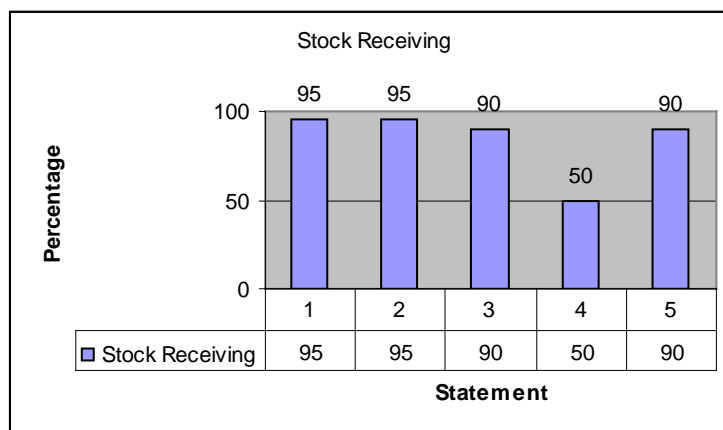
- Order quantities are placed according to historic demand, preferably those of the previous 3 months. The pharmacist utilises drug usage reports and obtains a margin of +/- 10 percent variance for ordering medication, maintaining minimum and maximum stock levels and seasonal demand variances;
- Orders are placed as soon as possible, and as required. Frequently, emergency medication is ordered immediately as it is needed;
- The time delay from ordering up until receiving medication ranges between 24 to 48 hours;
- The relevant ordering software (Orderwise) indicates whether stock has been ordered in the previous days. The order book is audited and invoices are captured immediately both to indicate relevant stock levels and to prevent duplicate ordering of medication; and
- When stock-outs at wholesalers occur, generic substitution is implemented or medication is ordered from another wholesaler. Medication is occasionally borrowed from other institutions.

Transfarm, UPD and Alphapharm are given as the most favourable wholesalers from which to order medication.

Proper ordering systems and procedures signify effective and timely receiving of required medication.

3.7.2. Stock Receiving

Figure i – Stock Receiving



Graphical Representation; Platinum Health Pharmacy Statistics – Stock Receiving. (Numbers 1 to 5 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms.)

From statements 1 to 5, concerning Stock receiving, it emerged;

1. That 95 percent of the respondent's facilities receive medication daily;
2. That 95 percent of the respondent's facilities have a responsible person for receiving stock;
3. That 90 percent of the respondent's facilities have a responsible person who checks for quality, quantity, storage instructions, expiry dates, batch numbers, discrepancies and documents the relevant information;
4. That 50 percent of the respondent's facilities utilise the discrepancy report system. The valid percentage is 54 percent, as one respondent did not complete this statement; and
5. That 90 percent of the respondent's facilities have a policy for the special handling and receiving of abnormal substances. (For example, flammable gasses, methylated spirit and narcotic gases.)

Platinum Health Pharmacies responded with an average of 84 percent adherence to Stock Receiving. The outstanding statistic (outlier) indicates that only 50 percent of the respondent's facilities utilise a discrepancy report system. This is diagnosed as an area that needs improvement.

Empirical result pertaining open-ended questions and comments:

Stock receiving ascertains the effective and accurate receiving of medication and inventory, together with the consequent accurate recording of the received inventory. Delivery discrepancies have financial implications for the relevant facilities.

Respondents indicated that when a delivery discrepancy occurs:

- The discrepancy is recorded and noted on the invoice with a proper description and accurate identification of the discrepancy;
- The problem medication is quarantined;
- The supplier is notified, seeking a refund or the replacement of the affected medication. When appropriate, the supplier will collect the incorrect medication; and
- If appropriate and authorised, medication may be kept and utilised.

Respondents indicated that the most common reasons for delivery discrepancies are:

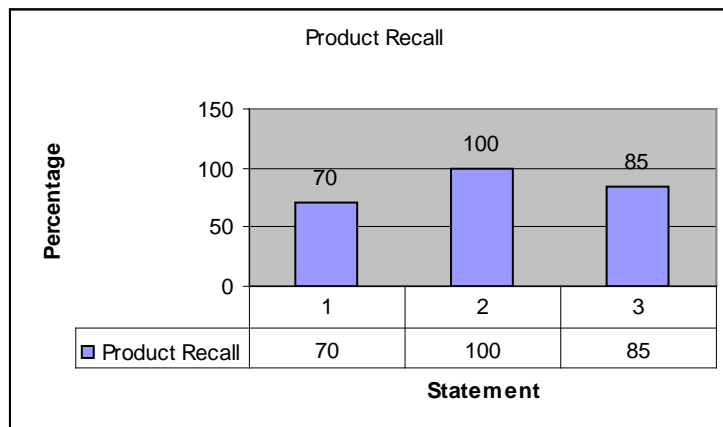
- Damaged stock; and
- Picking errors made by suppliers;

Receiving medication accurately ensures readily available medication without overstocking.

3.8. Managing Medication in the Pharmacy

3.8.1. Product Recall

Figure j – Product Recall



Graphical Representation; Platinum Health Pharmacy Statistics – Product Recall. (Numbers 1 to 3 is the statements in the questionnaire that were completed by the respondents with the relevant percentage adherence presented as histograms).

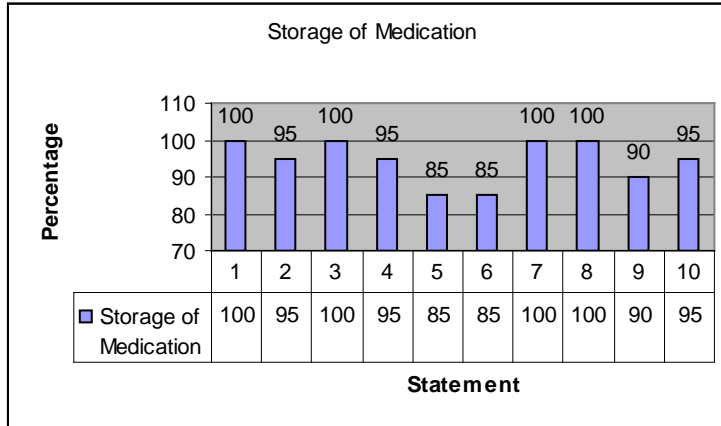
From statements 1 to 3, regarding Product Recall, it emerged;

1. That 70 percent of the respondent's facilities receive notification of a recall of medicine regularly;
2. That 100 percent of the respondent's facilities react immediately to the recall; and
3. That 85 percent of the respondent's facilities take all measures to retrieve issued medication on recall. The valid percentage is 90 percent, as one respondent did not complete this statement.

Platinum Health Pharmacies responded with an average of *85 percent* adherence to Product Recall.

3.8.2. Storage of Medication

Figure k – Storage of Medication



Graphical Representation; Platinum Health Pharmacy Statistics – Storage of Medication. (Numbers 1 to 10 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 10, concerning the Storage of Medication, it emerged:

1. That 100 percent of the respondent’s facilities maintain the cold-chain;
2. That 95 percent of the respondent’s facilities monitor refrigerator (2-8 degrees Celsius) and pharmacy temperatures (below 25 degrees Celsius) twice daily;
3. That 100 percent of the respondent’s facilities implement FIFO or FEFO methods of stocking;
4. That 95 percent of the respondent’s facilities stock shelves alphabetically and according to bins;
5. That 85 percent of the respondent’s facilities have a specific store for flammable gasses and toxic substances. The valid percentage is 90 percent, as one respondent did not complete this statement;
6. That 85 percent of the respondent’s facilities monitor environmental factors affecting the stability of medication, e.g. moisture and humidity;
7. That 100 percent of the respondent’s facilities maintain Schedule 5 and 6 lockable cupboards;
8. That 100 percent of the respondent’s facilities places stock properly on shelves and wooden pallets;

9. That 90 percent of the respondent's facilities pharmacies are secured with security gates, cameras and special locks, for example, those using key pads; and
10. That 95 percent of the respondent's facilities pharmacies are well ventilated and sanitary.

Platinum Health Pharmacies responded with an average of 95 percent adherence to Storage of Medication.

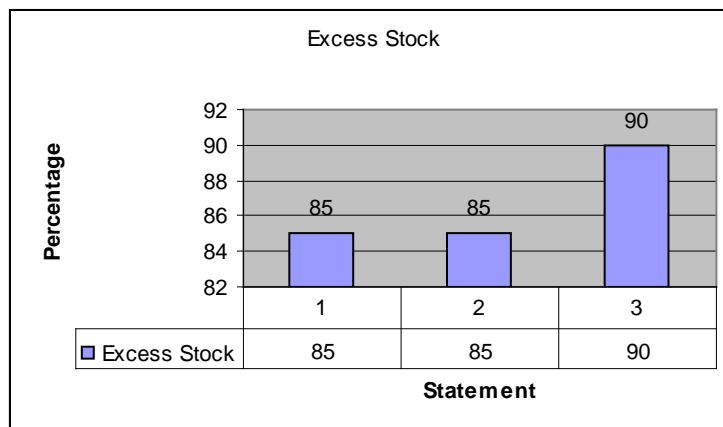
Empirical result pertaining open-ended questions and comments:

Respondents indicated a lack of sufficient storage space in pharmacy facilities.

Proper storage facilities lead to effective management and control of medicine as inventory.

3.8.3. Excess Stock

Figure I – Excess Stock



Graphical Representation; Platinum Health Pharmacy Statistics – Excess Stock. (Numbers 1 to 3 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 3, concerning Excess Stock, it emerged;

1. That 85 percent of the respondent's facilities regularly disperse excess medication;
2. That 85 percent of the respondent's facilities regularly check for excess medication; and

- That 90 percent of the respondent's facilities distribute excess stock to other facilities.

Platinum Health Pharmacies responded with an average of 87 percent adherence to Excess Stock.

Empirical result pertaining open-ended questions and comments:

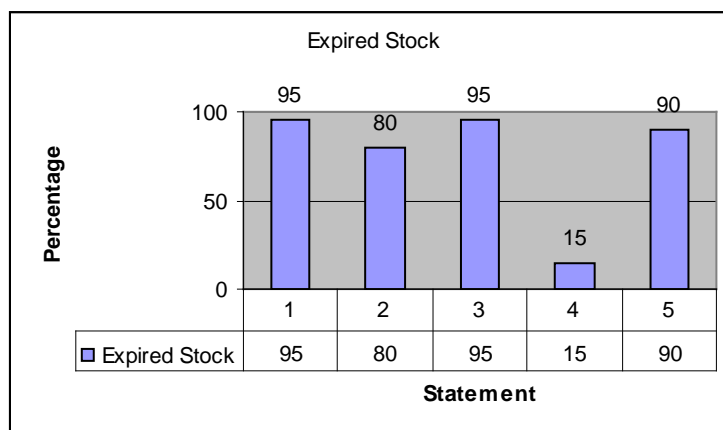
Respondents indicated the main factors contributing to excess stock are:

- Ordering medication that is no longer needed, or has become redundant;
- Declining medicine utilisation, leading to excess medication;
- Generic substitution, leading to decreased utilisation of certain medications;
- Seasonal changes, therefore variance in demand quantity occurring; and
- Certain prescribers preferring certain medications, hence the declining utilisation of other medication.

Minimising the occurrence of excess stock improves financial performance and consequently leads to effective procurement for new medication, hence, effective medicine control.

3.8.4. Expired Stock

Figure m – Expired Stock



Graphical Representation; Platinum Health Pharmacy Statistics – Expired Stock. (Numbers 1 to 5 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 5, concerning Expired Stock, it emerged:

1. That 95 percent of the respondent's facilities regularly dispose of expired medication;
2. That 80 percent of the respondent's facilities distribute excess stock to other facilities;
3. That 95 percent of the respondent's facilities implement correct procedures and documentation when discarding medication. (For example, standard forms and official documents);
4. That only 15 percent of the respondent's facilities have their own incinerators. The valid percentage is 18 percent, as three respondents did not complete this statement; and
5. That 90 percent of the respondent's facilities regularly check for expired medication. The valid percentage is 95 percent, as one respondent did not complete this statement.

Platinum Health Pharmacies responded with an average of 75 percent adherence to Expired Stock.

Empirical result pertaining open-ended questions and comments:

Respondents indicated the main factors contributing to expired stock are:

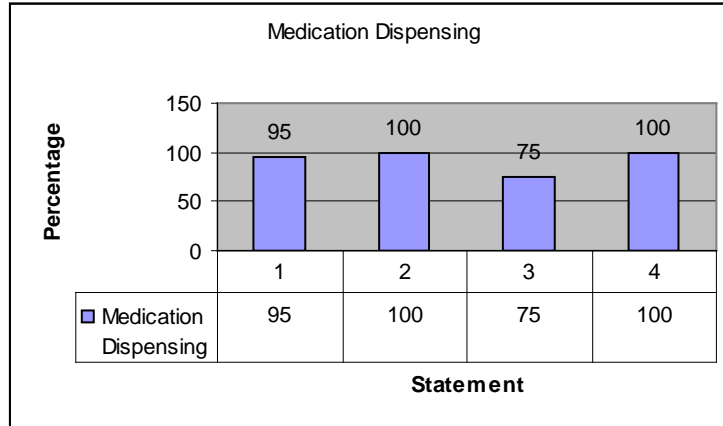
- Over-abundant ordering;
- Short-dated expiry of medication;
- Incorrect ordering; and
- Patient illiteracy, leading to a lack of knowledge regarding the effective use of the medication.

Respondents indicated that expired medication with a value of less than R 1000 is discarded weekly, while the monthly or quarterly costs range between R 1000–R 20 000. Most facilities indicated that they are contracted to a company, Steinmed, to destroy expired medication. Only two facilities have their own incinerators.

Minimising the occurrence of expired stock improves financial performance and consequently leads to effective procurement for new medication, hence, effective medicine control.

3.9. Medication Dispensing

Figure n – Medication Dispensing



Graphical Representation; Platinum Health Pharmacy Statistics – Medication Dispensing. (Numbers 1 to 4 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 4, regarding Medication Dispensing, it emerged:

1. That 95 percent of the respondent’s facilities implement the Platinum Health formulary;
2. That 100 percent of the respondent’s facilities practice generic substitution;
3. That 75 percent of the respondent’s facilities diagnosis codes normally correlates with medication prescribed; and
4. That 100 percent of the respondent’s facilities practice cost–effective substitution.

Platinum Health Pharmacies responded with an average of 93 percent adherence to Medication Dispensing.

Empirical result pertaining open-ended questions and comments:

Proper dispensing techniques signify optimal inventory utilisation. Generic substitution carries significant value for effective dispensing, with relevance to readily availability of medicinal treatment.

Respondents indicated the main reasons for generic substitution are:

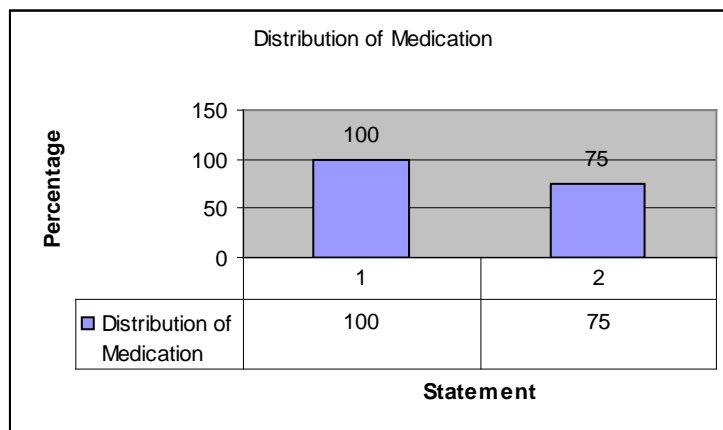
- Prescriber requirement; and

- The most appropriate reason is, the patient does not want to make a co-payment on branded or original medication.

Effective generic substitution relies on the availability of generic products and on implementation by the pharmacist and prescribers. This leads to optimal utilisation of substitutable products, hence gaining a higher margin of inventory utilisation, and so resulting in effective medicine control.

3.10. Distribution of Medication

Figure o – Distribution of Medication



Graphical Representation; Platinum Health Pharmacy Statistics – Distribution of Medication. (Numbers 1 to 2 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 2, concerning Distribution of Medication, it emerged;

1. That 100 percent of the respondent's facilities utilise the Platinum Health distribution system: and
2. That 75 percent of the respondent's facilities regularly audit delivery and receipt notes. The valid percentage is 80 percent, as one respondent did not complete this statement.

Platinum Health Pharmacies responded with an average of 88 percent adherence to Distribution of Medication.

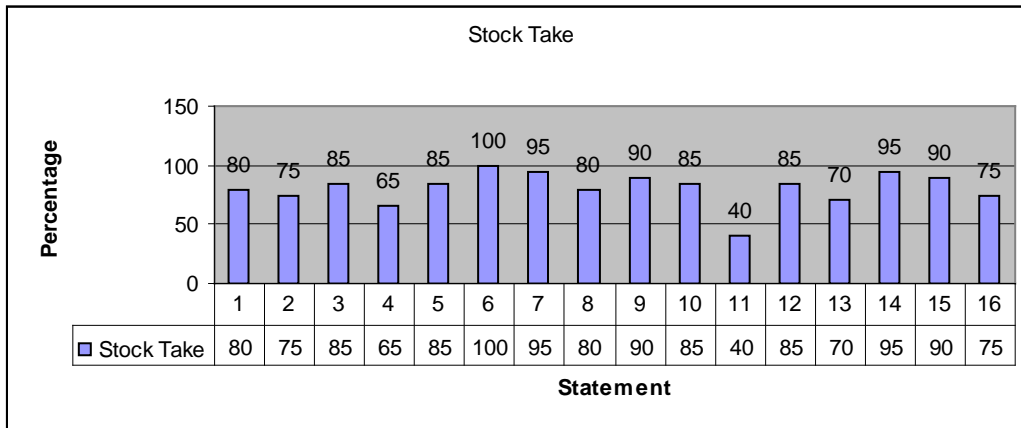
Empirical result pertaining open-ended questions and comments:

Respondents indicated daily and weekly utilisation of the Platinum Health distribution system to distribute excess stock and, as appropriate, to receive needed or requested stock. The system is also used for distribution of chronic medication.

Effective distribution and procurement of medication signifies both timely and readily available medication, thereby facilitating effective medicine control.

3.11. Stock Take

Figure p – Stock Take



Graphical Representation; Platinum Health Pharmacy Statistics – Stock Take. (Numbers 1 to 16 is the statements in the questionnaires that were completed by the respondents with the relevant percentage adherence presented as histograms).

From statements 1 to 16, concerning Stock Take, it emerged:

1. That 80 percent of the respondent’s facilities do weekly mini–stock takes;
2. That 75 percent of the respondent’s facilities have personnel assigned to specific bins and shelves and these personnel are held responsible for the quality and quantity of stock on their shelves;
3. That 85 percent of the respondent’s facilities perform mini–stock takes at a scheduled time when minimum movement of stock is expected;
4. That 65 percent of the respondent’s facilities personnel do mini–stock takes simultaneously;
5. That 85 percent of the respondent’s facilities capture data directly after the mini–stock take. The valid percentage is 90 percent, as one respondent did not complete this statement;

6. That 100 percent of the respondent's facilities personnel know well in advance when the main stock take will take place;
7. That 95 percent of the respondent's facilities stock takes occur when the pharmacy is closed;
8. That 80 percent of the respondent's facilities record the time and duration of the stock take;
9. That 90 percent of the respondent's facilities personnel start counting at the same time;
10. That 85 percent of the respondent's facilities counters are assisted by a spot checker;
11. That just 40 percent of the respondent's facilities have a financial auditor present with every stock take;
12. That 85 percent of the respondent's facilities do regular spot checks;
13. That 70 percent of the respondent's facilities, pharmacists capture the resulting data;
14. That 95 percent of the respondent's facilities investigate variances. The valid percentage is 100 percent, as one respondent did not complete this statement;
15. That 90 percent of the respondent's facilities implement quality control procedures. The valid percentage is 100 percent, as two respondents did not complete this statement; and
16. That 75 percent of the respondent's facilities implement quality improvement procedures. The valid percentage is 83 percent, as two respondents did not complete this statement.

Platinum Health Pharmacies responded with an average of 81 percent adherence to Stock Take. The outstanding statistics (outliers) with relevant significance indicates that only 65 percent of the respondent's facilities personnel do mini-stock takes simultaneously. Further, only 40 percent of the respondent's facilities have a financial auditor present with every stock take. These statistics are diagnosed as areas that need improvement.

Empirical result pertaining open-ended questions and comments:

During stock take, variances are normally obtained which have financial implications for the facility and directly indicate the level of effective medicine control.

Respondents indicated that when a variance is diagnosed, the relevant stock is recounted and checked and, if the variance persists, an investigation is launched to determine the reason for the variance.

Respondents indicated the main reasons for stock take variances are:

- Incorrect recording of received medication;
- Incomplete or incorrect recording and capturing of dispensed medication and transfers; and
- Incomplete or incorrect recording and capturing of stock levels during stock take.

Respondents identified the following procedures with relevant significance for quality control:

- Regular checks for expired stock;
- Regular mini-stock takes; and
- Necessary stock adjustments made regularly.

Accurate stock take directly indicates the financial value of operations with relevant significance towards financial performance and management of the facility. Managing accurate inventory levels improves financial performance and consequently leads to effective procurement for new medication, thus to effective medicine control.

3.12. Chapter Summary

In this chapter the research methodology was explained and the results discussed. The discussion included both the primary and secondary research objectives of the literature and the empirical investigation, data sources, study population, data analysis and measuring instruments. The next chapter (Chapter 4) contains the conclusions and recommendations of the empirical study.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1. Introduction

This chapter discusses the fourth phase of the research, that is, the conclusions drawn and recommendations made, based on the criteria of the literature review and on the results gained from the empirical investigations.

Chapter 1 set the framework for this dissertation. It entailed the introduction and background leading to, and motivating the cause for, research on the relevant topic of effective medicine control for Platinum Health Pharmacies. Chapter 1 clearly stated the relevant problem concerning effective medicine control. From this, objectives were set and were investigated during the research.

The literature study examined in Chapter 2 set the criteria for effective medicine control for Platinum Health Pharmacies. These criteria were established through research into effective medicine control.

The empirical study subsequently discussed in Chapter 3 offers the results of the research questionnaires that were constructed based on the criteria determined in Chapter 2. These questionnaires were distributed to all Platinum Health Pharmacies and were completed by the relevant participants. The participants indicated the relevant adherence at their facilities to the questions posed.

Chapter 3 discussed the adherence of Platinum Health pharmacies to the set criteria. Open-ended questions were deliberately added to the research instrument for the participants to give general comments and so possibly permit the identification of problem areas which might otherwise have been overlooked.

Criteria that were not satisfactorily met are identified as outliers. These outliers are characterised as areas diagnosed and recommended for improvement.

This chapter entails the discussion of meeting the relevant primary and secondary objectives as set out in chapter 1.

Conclusions were drawn from both the literature review and from the empirical results. The recommendations derived from the study on the effective medicine control for Platinum Health Pharmacies will be discussed below.

4.2. Limitations of the study

The study has a number of limiting factors. Most importantly, not all of the distributed questionnaires have been retrieved or fully completed. This could affect the validity of the resulting data. Next, the concept of Medicine Control is broad, thus interpretations of the terms used may vary, perhaps also leading to questionable results. A particular problem with qualitative methods is that answers obtained from open questions are, perforce, unstructured. This makes data analysis a difficult and time-consuming task, and perhaps one open to subjective interpretation. Finally, respondents may express their subjective views, thus introducing bias and so perhaps resulting in a higher margin of error (Bekkestua, 2003).

The findings of the study will thus be limited to the extent that the respondents are able to be honest, careful, and without bias when responding to the survey instrument.

4.3. Conclusions

In order to ensure the set aims were achieved, the conclusions drawn concerning each objective as laid out in Chapter 1 will be discussed:

Primary objective

- *The primary objective of this research is to help improve medicine control in Platinum Health Pharmacies, cost-effectively with minimum risk. In particular this research addresses the concept of the organisations medicine control capability.*

An overview is given of the effective medicine control for Platinum Health Pharmacies in the literature study given above as Chapter 2. (Refer to sections 2.2. to 2.10.) Chapter 2 sets the standard for effective medicine control with particular relevance to Platinum Health Pharmacies. Chapter 2 is divided into specific criteria to make it clearer, and to enable easy diagnosis of problem areas when investigating the relevant topics. Altogether, it is important that Platinum Health Pharmacies adhere to these criterions.

A brief recap of the literature study and specific criteria from Chapter 2 follows;

Concerning the relevant criteria for effective medicine control for Platinum Health Pharmacies, the following standards are set:

First and foremost, the criterion of **Good Pharmacy Practice** entails that every registered pharmacy is obliged to adhere to rules and regulations of **Good Pharmacy Practice** set by the Pharmacy Council of South Africa. This includes regular inspections to ensure that set standards are met for pharmaceutical service delivery.

Secondly, **Control over Medicine** entails that medicine is controlled by the Medicines and Related Substances Control Act 101 of 1965. Medication is essential for promoting human health and therefore needs to be controlled by defined and regulated authorities.

Thirdly, **Medicine Procurement** entails that medication need to be obtained and distributed through cost-effective methods to sustain profitability for Platinum Health. Hence effective procurement is vital.

Prescribing Medication entails that Platinum Health Pharmacies rely on effective and accurate diagnosis made by the doctors before writing prescriptions and enabling the pharmacist to dispense correct medication to enhance healthcare.

Ordering Medication and Receiving entails that cost-effective method of obtaining medication and the auditing of received medication sets the platform for effective medicine control in Platinum Health Pharmacies.

Managing Medication in the Pharmacy with specific reference to Product **Recall, Storage of Medication, Excess Stock and Expired Stock**, entails a constant control over the named processes to optimize service delivery for Platinum Health Pharmacies.

Medication Dispensing entails that Platinum Health Pharmacies maintain timely, accurate and effective dispensing methods to deliver a continuous supply of pharmaceutical service delivery.

Distribution of Medication entails that effective distribution methods conclude constant supply and effective control over medication.

Finally and most importantly, **Stock Takes** mandate that Platinum Health Pharmacies undertake regular auditing through quarterly stock takes. Stock take apprehends the financial viability and is an indicator of effective medicine control of the relevant facility.

To conclude, the significance of each aspect indicates a partial agreement leading to fulfilment of the pharmaceutical service delivery requirement and so leads to effective medicine control for Platinum Health Pharmacies.

Secondary objectives

- *Review the current application of medicine control in Platinum Health Pharmacies,*

An overview is given on the application of medicine control in Platinum Health Pharmacies in the empirical study apprehended in chapter 3. (Refer to section 3.3. to 3.11.) Chapter 3 discusses the results which emerged from the distributed and completed questionnaires. The questionnaires were constructed on the basis criterion set in chapter 2. The completed questionnaires were analyzed and the percentage adherence to each criterion was established. A brief discussion of the results obtained in the empirical study (chapter 3), pertaining adherence to the literature study in chapter 2 follows;

The results from the questionnaires indicate that the larger percentage of respondents was managers, between the ages of 31 to 40 years old and female. This underlines the legitimacy and validity of responses obtained from questionnaires and indicates a relatively experienced workforce.

In essence, Effective Medicine Control for Platinum Health Pharmacies requires the constant control and updating of the pharmaceutical policies and procedures, and adherence to the following criterion as laid out from the literature study of Chapter 2:

Concerning the current application of effective medicine control for Platinum Health Pharmacies measured against each relevant criterion, the following results were obtained:

Platinum Health Pharmacies responded with an average of *89 percent* adherence to the ***Good Pharmacy Practice*** in South Africa criterion.

Platinum Health Pharmacies responded with an average of *76 percent* adherence to ***Control over Medicine*** criterion.

Platinum Health Pharmacies responded with an average of *75 percent* adherence to ***Medicine Procurement*** criterion.

Platinum Health Pharmacies responded with an average of *83 percent* adherence to ***Prescribing Medication*** criterion.

Platinum Health Pharmacies responded with an average of *89 percent* adherence to ***Ordering Medication*** criterion and an average of *84 percent* adherence to ***Stock Receiving*** criterion.

Platinum Health Pharmacies responded with an average of *85 percent* adherence to ***Product Recall*** criterion, an average of *95 percent* adherence to ***Storage of Medication*** criterion, an average of *87 percent* adherence to ***Excess Stock*** criterion and an average of *75 percent* adherence to ***Expired Stock*** criterion.

Platinum Health Pharmacies responded with an average of *93 percent* adherence to ***Medication Dispensing*** criterion. This is also the criterion with the highest average adherence to the set criterion.

Platinum Health Pharmacies responded with an average of *88 percent* adherence to ***Distribution of Medication*** criterion.

Platinum Health Pharmacies responded with an average of *81 percent* adherence to ***Stock Take*** criterion.

Platinum Health Pharmacies scored an overall average of *85 percent* adherence to the set criteria for effective medicine control at Platinum Health Pharmacies. Nothing else needs to be done in specific terms.

- *Indicate shortcomings of current strategies and emphasize the practical benefits to be derived from new definitions,*

Throughout Chapter 3, the empirical study, adherence to the criteria determined in the literature study (Chapter 2) is discussed. Certain statistics were, however, identified as indicative of low adherence to the set criteria.

Based on the results of this study with regards to *Effective Medicine Control for Platinum Health Pharmacies*, the following criteria are identified as unsatisfactory:

First of all, concerning the **Control over Medicine** aspect, only *50 percent* of the respondent's facilities have a risk management plan, for example, managing a pandemic outbreak.

Secondly, concerning the application of **Medicine Procurement** aspect, only *60 percent* of the respondent's facilities implement quality improvement procedures.

Thirdly, according to the **Ordering and Receiving Medication** aspects, only *65 percent* of the respondent's facilities implement the JIT (Just in Time) system, also, only *50 percent* of the respondent's facilities utilize the discrepancy report system.

Fourthly, concerning the **Stock Take** criterion, only *65 percent* of the respondent's facilities personnel do mini-stock takes simultaneously.

Finally, only *40 percent* of the responding facilities have a financial auditor present at every stock take.

These statistics are diagnosed as areas that need improvement, and are therefore identified as shortcomings in the current strategies to optimise effective medicine control for Platinum Health Pharmacies.

In terms of a response to the abovementioned shortcomings, rectification plans by Platinum Health Pharmacies will offer the following, very practical, benefits:

Obtaining a proper risk management plan will ensure appropriate and sufficient inventory when needed. The risk management plan should include procurement and storage of inventory (Brits, 2007:59-60). When Platinum Health implements quality improvement procedures (QIP's) this will ensure up to date adherence to standards and procedures for effective medicine control (Carey & Lloyd, 2001:1-12). Also, when Platinum Health implements the JIT system, they will ensure decreased stock-turnover periods, increasing value-added and eliminating waste (Kotelnikov, s.a.). By adopting the utilisation of proper discrepancy reporting systems, pharmacies will ensure accurate receiving of medication. Lastly when Platinum Health Pharmacies improves stock-take procedures and their adherence to these procedures they will ensure increasingly accurate inventory quantity reflection (Rowling & Cook, 2000).

4.4. Recommendations

Based on the results of this study with regards to the aspects of *Effective Medicine Control for Platinum Health Pharmacies* the following recommendations are made:

Firstly, concerning the **Control over Medicine** aspect, Platinum Health Pharmacies should obtain proper risk management plans (for example, managing a pandemic outbreak). These should include effective procurement of medication, personnel and storage facilities. The application of the **Medicine Procurement** aspect should include the implementation of Quality Improvement Procedures (QIP's), hence identifying areas for improvement and for diagnosing quality improvement procedures for each. According to the **Ordering and Receiving Medication** aspects, implementation of a JIT system ensures the timely and accurate ordering from selected suppliers of repute who have credibility. The utilisation of proper discrepancy reporting systems will assist timely and accurate receiving of the correct medication. Lastly, regarding the **Stock Take** aspect, stock-take procedures are characterised as the ultimate reporting system of the facility's inventory, hence this criterion needs careful consideration and rigorous adherence.

Furthermore, Platinum Health management should consider stock optimization controls that include proper communication when ordering and procuring medication from other sites and departments. All medication orders should be reviewed for both appropriateness and legitimacy. Stock optimization controls should include proper space availability and the verification of medicine storage under the specified conditions. The preparation of medicine also needs to take place in sterile and suitable conditions and, the timely and accurate dispensing and distribution of medicines is a contributing factor towards ensuring effective medicine control for Platinum Health Pharmacies (Shane, 2009:35-42).

Yet another recommendation includes the use of appropriate information technology in hospitals and pharmaceutical facilities that will enhance the optimization of effective medicine control and will enable transparency for operations management (Costa *et al.*, 2004:371).

The bottom-line recommendation would be to develop key performance indicators (KPI's) for each criterion set out for effective medicine control. These KPI's should

use measuring instruments required to be monitored at specified intervals (Reh, 2010). The implementation of **Gantt charts**, **process maps** and **self-assessment maps** will also be of significant value.

To conclude, effective medicine control for Platinum Health Pharmacies in essence concerns the control and improvement of inventory turnovers, procurement costs, carrying costs, gross margin returns on investment and the avoidance of slow moving inventory. Therefore, Platinum Health's pharmaceutical operations should be managed as a system.

Implementing the abovementioned recommendations should provide clear and manageable objectives that will enhance effective medicine control for Platinum Health Pharmacies.

These objectives will facilitate adherence to Platinum Health's Vision, that is, "To provide appropriate healthcare of high quality, cost-efficiently, which will obtain the approval of all stakeholders." and to their Mission, that is, "To practice and administer appropriate medicine of such a high standard as to obtain the explicit approval of all our stakeholders" (Platinum Health, 2010).

In essence, "You can't manage what you don't measure." (Reh, 2010.)

4.5. Chapter Summary

The practical benefits gained from effective medicine control may be illuminated as, better customer service and satisfaction, improved product life cycle management, lower costs, better inventory management, (and) greater flexibility and efficiency (Geimer & Tomlinson, 2002:68-69).

The study was concluded in this chapter. All the objectives and research questions were addressed. Recommendations that were derived from completion of this study, together with the limitations that were encountered during the course of the study, have been discussed.

ANNEXURES

Annexure A – Dispensing Medicines – Checklist

6.1. Validate prescriptions

- 6.1.1. *Checks prescriptions are complete, legal and authentic.*
- 6.1.2. *Obtains information needed to make prescriptions complete and correct.*
- 6.1.3. *Verifies prescriptions received by fax, telephone or email.*

6.2. Assess prescriptions

- 6.2.1. *Determines whether individual prescriptions should be dispensed.*
- 6.2.2. *Follows workplace dispensing criteria when dispensing a prescription item.*
- 6.2.3. *Prioritises prescriptions.*
- 6.2.4. *Determines the stock availability of prescribed medicines.*

6.3. Review patients' medicines in relation to their histories

- 6.3.1. *Accesses patient medicine records.*
- 6.3.2. *Detects medicine problems from individual patients' medicine histories.*
- 6.3.3. *Identifies patient factors likely to affect the efficacy or safety of specified medicines.*

6.4. Decide what is safe and appropriate to dispense

- 6.4.1. *Confirms that each selected medicine is suitable for the patient.*
- 6.4.2. *Addresses factors likely to affect patient compliance.*
- 6.4.3. *Applies all patient information to dispensing decisions.*

6.5. Fill prescriptions

- 6.5.1. *Obtains prescribed medicines.*
- 6.5.2. *Maintains a logical, safe and disciplined dispensing procedure.*
- 6.5.3. *Fulfils the conditions and requirements specified in the relevant legislation.*

6.6. Package medicines to optimise safety and compliance

- 6.6.1. *Packages medicines in suitable containers.*
- 6.6.2. *Produces comprehensible and complete labels for medicines.*

6.7. Maintain dispensing records

- 6.7.1. *Fulfils legal requirements and professional conventions regarding maintenance of records.*

6.8. Counsel patients about their medicines

- 6.8.1. *Ensures patient receives the correct medicine.*
- 6.8.2. *Informs and advises about medicines.*
- 6.8.3. *Demonstrates the correct method of administering medicines.*

Annexure B – Discrepancy Form

SUPPLY CHAIN MANAGEMENT DIRECTORATE
SUB-DIRECTORATE: MEDPHARM-MEDICAL DEPOT
DISCREPANCY REPORT

NOTICE: DISCREPANCIES MUST BE REPORTED WITHIN 48 HOURS

1. Telephonic conversation with _____ on _____
refers.

2. Demander's code: _____

3. Demand No. _____

4. Issue voucher No. _____ Quantity: _____

5.

ACTUAL STOCK RECEIVED	SHORTAGE	SURPLUS	WRONG ITEM	BREAKAGES

6. Remarks: _____

7.

Questionnaire	Yes	No
Was there any indication that the boxes might have been tampered with		
Were all the boxes opened		
Does the quantity of boxes on the dispatch voucher correspond with the actual stock		

- Actual number of boxes received: _____
- Number of boxes according to dispatch voucher: _____

8. _____ DATE: _____

SIGNATURE: RECEIVING CLERK

PRINT NAME: _____

TELEPHONE No. _____

9. _____ DATE: _____

SIGNATURE: PERSON IN CHARGE/WITNESS

PRINT NAME: _____

TELEPHONE No. _____

Annexure C – Adverse Drug Reaction and Product Quality Problem Report Form

ARF 1



ADVERSE DRUG REACTION AND PRODUCT QUALITY PROBLEM REPORT FORM

(Identities of reporter and patient will remain strictly confidential)

NATIONAL ADVERSE DRUG EVENT MONITORING CENTRE

Medicines Control Council,
The Registrar of Medicines,
Department of Health

Tel: (021) 447-1618
Fax: (021) 448-6181

In collaboration with the WHO International Drug Monitoring Programme

PATIENT INFORMATION

Name (or initials): Age: Weight (kg) :

Sex: M F DOB :/...../..... Height (cm) :

ADVERSE REACTION/PRODUCT QUALITY PROBLEM

Adverse reaction¹ and/or Product Quality problem² Date of onset of reaction:/...../.....
Time of onset of reaction:h.....min

Description of reaction or problem (Include relevant tests/lab data, including dates):

1. MEDICINES/VACCINES/DEVICES (include all concomitant medicines)

Trade Name & Batch No. (Asterisk Suspected Product)	Daily Dosage	Route	Date Started	Date Stopped	Reason for use

ADVERSE REACTION OUTCOME (Check all that apply)

<input type="checkbox"/> Death <input type="checkbox"/> Disability <input type="checkbox"/> congenital anomaly <input type="checkbox"/> required intervention to prevent permanent impairment/damage	<input type="checkbox"/> life-threatening <input type="checkbox"/> hospitalisation <input type="checkbox"/> Other:	Event reappeared on rechallenge: <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Rechallenge not done Treatment (of reaction):	Recovered: <input type="checkbox"/> Y <input type="checkbox"/> N Sequelae: <input type="checkbox"/> Y <input type="checkbox"/> N Describe Sequelae:
---	--	---	--

COMMENTS: (e.g. Relevant history, Allergies, Previous exposure, Baseline test results/lab data)

2. PRODUCT QUALITY PROBLEM:

Trade Name	Batch No	Registration No	Dosage form & strength	Expiry Date	Size/Type of container

Product available for evaluation?: Y N

REPORTING DOCTOR/PHARMACIST Etc:

NAME: QUALIFICATIONS:

ADDRESS:

TEL: (.....)

Signature: Date:

This report does not constitute an admission that medical personnel or the product caused or contributed to the event.

ADVICE ABOUT VOLUNTARY REPORTING

Report adverse experiences with:

- medications (drugs, vaccines and biologicals)
- medical devices (including in-vitro diagnostics)
- traditional and herbal remedies
- **For Adverse Events Following Immunisation (AEFI), please follow the reporting procedure recommended by the Expanded Programme in Immunisation (EPI)**

Please report:

- adverse drug reactions to recently marketed products
- serious reactions and interactions with all products
- adverse drug reactions which are not clearly reflected in the package insert.

Report even if:

- you're not certain the product caused the event
- you don't have all the details

Report Product Quality Problems such as:

- suspected contamination
- questionable stability
- defective components
- poor packaging or labelling
- therapeutic failures

Important numbers:*Investigational Products and Product Quality Problems:*

- (012) 326-4344 to fax a report
- (012) 312-0000 to report by phone

Registered Medicines and Traditional and Herbal remedies:

- (021) 448-6181 to fax a report
- (021) 447-1618 to report by phone

Adverse Events Following Immunisation:

- (012) 312 0110 to phone for information
- (012) 321 9882 to fax a report

Confidentiality: Identities of the reporter and patient will remain strictly confidential.

Your support of the Medicine Control Council's adverse drug reaction monitoring programme is much appreciated. Information supplied by you will contribute to the improvement of drug safety and therapy in South Africa.

PLEASE USE ADDRESS PROVIDED BELOW- JUST FOLD IN THIRDS, TAPE and MAIL

Postage will be paid by Addressee
Posgeld sal deur die geadresseerde betaal word

No postage stamp necessary if posted in the Republic of South Africa
Geen posgeld nodig nie indien in die Republiek van Suid-Afrika gepos

BUSINESS REPLY SERVICE
BESIGHEIDSANTWOORDDIENS
Free Mail Number:
Vryposnommer: BNT 178

DEPARTMENT OF HEALTH
DEPARTEMENT VAN GESONDHEID
REGISTRAR OF MEDICINES
REGISTRATEUR VAN MEDISYNE
PRIVATE BAG/ PRIVAATSAK X828
PRETORIA
0001

Annexure E – Disposal Document in Respect of Medicines

<u>Expiry date;</u>	
1. Commodity or item;	
2. Quantity;	
3. Rack number;	
4. ICN number;	
5. Classification;	
6. Delivery period;	
7. Minimum months;	
8. Minimum quantity;	
9. Maximum months;	
10. Maximum quantity;	
11. Lot nr;	
12. Balance of stock when new stock was ordered;	
13. Quantity ordered;	
14. Date ordered;	
15. Quantity received;	
16. Date received;	
17. Balance of old stock on receipt of new stock;	
18. Condition on receipt;	
19. Cause of perishing;	

By whom established (name in print); _____
Signature; _____ Rank; _____

By whom investigated (name in print); _____
Signature; _____ Rank; _____

Head of institution / office (name in print); _____
Signature; _____ Rank; _____

Annexure F – Participant Consent Form

Participant Consent Form

AGREEMENT

I have read (or, as appropriate, have had to read to me) and understood the information above. Any questions I have asked have been answered to my satisfaction.

I agree to participate in this activity, realising that I may withdraw at any time.

I agree that research data collected for the study may be published or provided to other researchers on the condition that anonymity is preserved and that I cannot be identified.

NAME OF PARTICIPANT.....

POSITION OF PARTICIPANT.....

SIGNATURE..... DATE.....

NAME OF PRINCIPLE INVESTIGATOR.....

SIGNATURE..... DATE.....

Source: D.J. Pretorius

Annexure G – Effective Medicine Control - Questionnaire

Effective Medicine Control for Platinum Health Pharmacies

Questionnaire

Title: Mr.

Name and Surname: D.J. Pretorius

Student number: 12407925

Date of birth: 02 August 1983

Degree: MBA

Format: Mini-dissertation (Skripsie)

Contact number: 083 707 0055

Email: dewaldp@angloplat.com or dewph@vodamail.co.za

Study leader: Prof. L. van der Walt

Instructions / Instruksies

Nr.

The purpose of this questionnaire is to gain insight into your thoughts and feelings regarding Medicine Control in Platinum Health Pharmacies. Think about your experiences in this company and continue to complete the questionnaire.

Die doel van hierdie vraelys is om insig in u waarnemings en gevoelens rondom Medisyne Beheer in Platinum Health Apteke te verkry. Dink na oor u ervaringe binne die maatskappy en voltooi die res van die vraelys.

1. Kindly indicate your response on each question by checking off with a cross (X) one of the alternatives provided. Do not leave any question out.

Dui asseblief u antwoord op elke stelling aan deur een van die alternatiewe wat voorsien is met 'n kruise (X) te merk. Moet geen vrae onbeantwoord laat nie.

2. There is no time limit, but you are requested to complete the questionnaire in one uninterrupted session.

Daar is geen tydsbeperking nie, maar u word versoek om die vraelys in een ononderbroke periode te voltooi.

3. There are no wrong or right answers. Only your honest opinions are required.

Daar is geen reg of verkeerde antwoorde nie. Slegs u eerlike mening is van belang.

4. Do not reveal your answers to another person or discuss it with them.

Moenie u antwoorde aan 'n ander persoon wys of dit met iemand anders bespreek nie.

BIOGRAPHICAL DATA

KINDLY COMPLETE THE FOLLOWING SECTION BY FILLING IN WHERE RELEVANT AND TICKING OFF THE APPROPRIATE BOXES:

1. INSTITUTION NAME: _____

2. INSTITUTION ADDRESS: _____

3. INSTITUTION TEL NR: _____ FAX NR: _____

4. OCCUPATION / POSITION:

PHARMACIST	<input type="checkbox"/>	MANAGER	<input type="checkbox"/>
ASSISTANT	<input type="checkbox"/>	STOCK CONTROLER	<input type="checkbox"/>

6. NUMBER OF EMPLOYEES APPOINTED AT PHARMACY: _____

7. FORMAL EDUCATION: _____

8. AGE:

20 to 30 years	31 to 40 years	41 to 50 years	50 +
----------------	----------------	----------------	------

9. GENDER:

MALE	<input type="checkbox"/>	FEMALE	<input type="checkbox"/>
------	--------------------------	--------	--------------------------

1	2	3	4	5	6	7
I disagree completely.	I moderately disagree.	I slightly disagree.	I do not agree nor disagree.	I slightly agree.	I moderately agree.	I agree completely.
Ek verskil geheel en al.	Ek verskil in 'n meerdere mate.	Ek verskil in 'n mindere mate.	Ek stem nie saam nie, maar verskil ook nie.	Ek stem in 'n mindere mate saam.	Ek stem in 'n meerdere mate saam.	Ek stem geheel en al saam.

1. Good Pharmacy Practice in South Africa

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Possesses a relevant Good Pharmacy Practice Guideline. <i>Is in besit van die relevante GPP – riglyne.</i>							
2.	Possesses Platinum Health Policies and Procedures. <i>Is in besit van die relevante Platinum Health Standaard Operasionele Prosedures en beleid.</i>							
3.	The pharmacy personnel implement these procedures. <i>Die relevante prosedures word aktief deur die apteek personeel ge-implementeer.</i>							
4.	The facility carries knowledge of the Medicines and Related Substances Control Act, Act 101 of 1965 and what it entails. <i>Die apteek personeel dra kennis van die Wet op Medisyne en Verwante Stowwe, Wet 101 van 1965.</i>							
5.	The facility implements continuous professional development (CPD). <i>Die fasiliteit implementeer voortgesette professionele ontwikkeling.</i>							

1. Please indicate relevant figures;

Dui asseblief die relevante syfers aan;

- Qualified pharmacist – assistants (Basic) in facility
- Qualified pharmacist – assistants (Post-basic) in facility
- Qualified pharmacists in facility
- Qualified pharmacy - assistants in facility

Comments / *Kommentaar;*

.....

.....

2. Control over Medicine

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Maintain minimum stock turnover times. <i>Handhaaf minimum voorraad – omkeer tydperk.</i>							
2.	The facility practice cost-effective Pharmaceutical Service delivery. <i>Die fasiliteit beoefen koste-effektiewe farmaseutiese dienslewering.</i>							
3.	The facility has a risk management plan, for example, managing a pandemic outbreak. <i>Die fasiliteit het 'n risiko-bestuur plan, bv. as 'n pandemie uitbreek.</i>							
4.	The facility utilizes the public rating and feedback plan. (E.g. Ouch and Wow). <i>Die fasiliteit gebruik gradering en kliënt tevredenheid meetinstrumente (Bv. Ouch en Wow).</i>							

1. Methods of cost-effective service delivery;

Metodes van koste-effektiewe dienslewering;

Please select all relevant options / *dui asseblief all relevante keuses aan;*

Implement formulary / *Implementeer formulêr*

Select cheapest supplier / *Selekteer goedkoopste verskaffer*

Other / *Ander;*

.....

2. Please indicate facility risk management plan;

Dui asseblief fasiliteit risiko bestuur plan aan;

.....

Comments / *Kommentaar;*

.....

3. Medicine Procurement

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Facility implements quality control procedures. <i>Fasiliteit handhaaf kwaliteit kontrole prosedures.</i>							
2.	Facility implements quality improvement procedures. <i>Fasiliteit handhaaf kwaliteit verbetering prosedures.</i>							
3.	Facility adheres to Good Pharmacy Practice Guidelines and minimum standard requirements for medicine and pharmaceutical products when procuring, documenting, storing and safely dispensing of medication.							

<i>Fasiliteit hou by die GPP riglyne en minimum standaarde wanneer medisyne en farmaseutiese produkte verkry, gedokumenteer, stoor en geresepteer word.</i>							
---	--	--	--	--	--	--	--

1. Please indicate relevant quality control procedures;
Dui asseblief die kwaliteit kontrole prosedures aan;

.....

2. Please indicate relevant quality improvement procedures;
Dui asseblief die kwaliteit verbetering prosedures aan;

.....

Comments / Kommentaar;

.....

4. Prescribing Medication

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	The prescribers and prescriptions conform to GPP Standards. <i>Voorskrywers en voorskrifte voldoen aan GPP Standaarde.</i>							
2.	The facility implements the ICD-10 list. <i>Die fasiliteit implementer die ICD-10 lys.</i>							
3.	The facility validates each prescription for completeness,							

<p>legal requirements and authenticity.</p> <p><i>Die fasiliteit bevestig die volledigheid, voldoening aan regsvereistes en egtheid van elke voorskrif.</i></p>							
---	--	--	--	--	--	--	--

Comments / Kommentaar;

.....

5. Ordering Medication and Receiving

5.1. Ordering Medication

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	<p>Ordering all medication required at time of purchase.</p> <p><i>Bestel alle medikasie benodig met geleentheid van bestelling.</i></p>							
2.	<p>Assure all medication needed is on purchase order.</p> <p><i>Maak seker dat alle benodigde medikasie op bestelling is.</i></p>							
3.	<p>Implement historical usage patterns to forecast purchase requirements.</p> <p><i>Implementeer historiese gebruik patrone om toekomstige behoeftes te bepaal.</i></p>							
4.	<p>Implementation of order book.</p> <p><i>Implementering van bestelboek.</i></p>							
5.	<p>Maintain minimum / safety stock levels.</p> <p><i>Handhaaf minimum / veilige vlak van voorraad.</i></p>							
6.	<p>Maintain maximum stock levels.</p> <p><i>Handhaaf maksimum vlak van voorraad.</i></p>							

7.	Maintain re-order levels. <i>Handhaaf her-bestel vlakke van voorraad.</i>							
8.	The facility orders every day. <i>Die fasiliteit bestel daaglik voorraad.</i>							
9.	The facility implements the JIT (Just In Time) system. <i>Die fasiliteit implementer die JIT stelsel.</i>							
10.	The facility interprets historical data for forecasting quantities to order. <i>Die fasiliteit interpreteer historiese data om toekomstige hoeveelhede te voorspel.</i>							
11.	The facility orders generic medication. <i>Die fasiliteit bestel generiese medikasie.</i>							
12.	Select the most cost-effective supplier. <i>Selekteer die mees koste-effektiewe verskaffer.</i>							
13.	Implementation of historical purchase quantity. <i>Implementering van historiese bestel hoeveelhede.</i>							
14.	Implementation of cost-effective medication purchase. <i>Implementering van koste-effektiewe aankope.</i>							
15.	Implementation of cheapest generic ordering. <i>Implementering van goedkoopste generiese bestelling.</i>							
16.	Maintain the lowest possible stock-turnover periods. <i>Handhaaf die laagste moontlike voorraad – omkeer tydperk.</i>							
17.	Replace previous day medication replenishment. <i>Vervang vorige dag se gebruikte medikasie.</i>							
18.	Prevent duplicate ordering.							

	<i>Voorkom duplikaat bestellings.</i>							
19.	Responsible person for ordering daily. <i>Verantwoordelike persoon wat daaglikse bestelling hanteer.</i>							

Please complete where appropriate / *Voltooi asseblief waar van toepassing:*

1. How do you make sure all required medication is on the purchase order?
Hoe maak jy seker dat alle benodigde medikasie op bestelling geplaas is?

.....

2. How do you determine order quantity?
Hoe bepaal jy bestel hoeveelhede?

.....

3. If medication is ordered according to need, is the order placed immediately or added to a list for later ordering?
Indien medikasie bestel word volgens behoefte, word die bestelling dadelik geplaas of word dit op die lys bygevoeg vir later bestelling?

.....

4. In your opinion which firm do you most prefer to order from?
Volgens jou opinie, watter firma verkies jy om bestellings by te plaas?

.....

5. What is your facilities average lead time for deliveries?
Wat is u fasiliteit se gemiddelde wagtydperk vanaf aflewering tot ontvangs?

.....

6. What procedure do you follow to prevent duplicate ordering?
Watter prosedure volg u om duplikaat bestellings te voorkom?

.....

7. What procedure do you follow when stock-outs at a supplier occurs?
Watter prosedure volg u as 'n verskaffer uit voorraad is?

.....

Comments / *Kommentaar;*

.....

5.2. Stock Receiving

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Regularly receive medication. (Daily) <i>Ontvang gereeld medikasie. (Daagliks)</i>							
2.	Responsible person for receiving stock. <i>Verantwoordelike persoon om voorraad te ontvang.</i>							
3.	The responsible person checks for quality, quantity, storage instructions, expiry dates, batch numbers and discrepancies and document the relevant information. <i>Die verantwoordelike persoon kontroleer die kwaliteit, kwantiteit, bergings instruksies, verval datums, bondel nommer en verskille en dokumenteer die relevante informasie.</i>							
4.	Utilize discrepancy report system.							

	<i>Implementeer die teenstrydigheid verslag sisteem.</i>							
5.	<p>Policy for special handling and receiving abnormal substances. (E.g. Flammable gasses, Methylated Spirits and Narcotic Gasses).</p> <p><i>Beleid vir spesiale hantering en ontvangs van abnormale stowwe. (Bv. Vlambare gasse, Metiel-alkohol en Narkotiese gasse).</i></p>							

1. What is the lead time from medication ordering to delivery?

Wat is die wagtydperk vanaf bestelling tot medikasie aflewering?

.....

2. The most appropriate action taken when a delivery discrepancy occurs;

Die mees gepaste aksie wanneer 'n teenstrydige aflewering voorkom;

Please describe action taken / beskryf gepaste hantering van situasie;

Documentation / Dokumentasie

.....

Keep stock / Hou voorraad

.....

Send back stock to supplier / Stuur voorraad terug na verskaffer

.....

3. Reasons for delivery discrepancy;

Redes waarom medikasie aflewering verskil;

Indicate most appropriate choice with X, thereby selecting a different choice for each;

Dui mees gepaste keuse aan met X, selekteer dus 'n ander opsie vir elkeen;

	Most Appropriate	Moderate	Least Appropriate
Suppliers cannot deliver medication. <i>Verskaffers lewer nie medikasie nie.</i>			
Suppliers delivering incorrect medication. <i>Verskaffers lewer verkeerde medikasie.</i>			
Suppliers out of stock. <i>Verskaffers geen voorraad om te lewer nie.</i>			

Other / Ander;

.....

Comments / Kommentaar;

.....

6. **Managing Medication in the Pharmacy**

6.1. Product Recall

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Receive recall of medication regularly. <i>Ontvang kennis van heroproep van medikasie gereeld.</i>							
2.	React immediately. <i>Reageer dadelik.</i>							
3.	Take all measures to retrieve issued medication on recall.							

	<i>Neem alle maatreëls om heropgeroepte medikasie terug te ontvang.</i>							
--	---	--	--	--	--	--	--	--

Comments / Kommentaar;

.....

6.2. Storage of Medication

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Maintain cold-chain. <i>Handhaaf koue-ketting.</i>							
2.	Monitor fridge (2-8 degrees Celsius) and pharmacy temperature (below 25 degrees Celsius) twice daily. <i>Monitor yskas (2-8 grade Celsius) en apteek temperatuur (onder 25 grade Celsius) twee keer daaglik.</i>							
3.	Implement FIFO / FEFO method of stocking. <i>Implementeer FIFO / FEFO metode van voorraad pak.</i>							
4.	Stock shelves alphabetically and according to bins. <i>Pak voorraad alfabeties op rakke en volgens afdeling.</i>							
5.	Specific store for flammable gasses and toxic substances. <i>Spesifieke stoor vir vlambare gasse en toksiese stowwe.</i>							
6.	Monitor environmental factors affecting the stability of medication, e.g. moisture and humidity. <i>Monitor omgewingsfaktore wat die stabiliteit van medikasie affekteer, bv. vog en humiditeit.</i>							
7.	Maintain schedule 5 and 6 lockable cupboards.							

	<i>Hou skedule 5 en 6 sluitbare kaste in stand.</i>							
8.	Stock is properly put on shelves and wooden pallets. <i>Voorraad word behoorlik op rakke en hout palette gepak.</i>							
9.	The pharmacy is secured with security gates, camera's and locks, e.g. key pads. <i>Die apteek word beveilig deur sekuriteits hekke, kamera's en slotte, bv kode blok.</i>							
10.	The pharmacy is well ventilated and sanitary. <i>Die apteek is goed geventileer en skoon.</i>							

Comments / Kommentaar;

.....
.....

6.3. Excess Stock

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Regularly disperse excess medication. <i>Versprei oortollige voorraad gereeld.</i>							
2.	Regularly check for excess medication. <i>Gereelde nagaan vir oortollige voorraad.</i>							
3.	Distribute excess stock to other facilities. <i>Versprei oortollige voorraad na ander fasilieteite.</i>							

1. Please indicate the main factors contributing to excess / expired stock;
Dui asseblief die hoof oorsake aan wat bydra tot oortollige en vervalde voorraad;

Redundant ordering / *Oortollige bestelling;*

Declining utilization / *Verminderde gebruik;*
 Generic substitution / *Generiese vervanging;*
 Seasonal change / *Seisoen verandering;*
 Patient illiterate / *Pasient ongeletterdheid*
 Patient brings medication back / *Pasient bring medikasie terug;*
 Change of medication regime / *Verandering in medikasie regime;*

Comments / *Kommentaar;*

.....

6.4. Expired Stock

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Regularly dispose of expired medication. <i>Gereelde verwydering van vervalde voorraad.</i>							
2.	Distribute excess stock to other facilities. <i>Versprei oortollige voorraad na ander fasiliteite.</i>							
3.	Implement correct procedures and documentation when discarding medication. (E.g. forms and officials). <i>Implementeer korrekte prosedures en dokumentasie wanneer voorraad afgeskryf word. (Bv. vorms en amptenaar).</i>							
4.	Facility has its own incinerator. <i>Fasiliteit beskik oor verbrandingsoond.</i>							
5.	Regularly check for expired medication. <i>Tydige kontrole van vervalde voorraad.</i>							

1. Reasons why medication expire and disposed;
Redes waarom medikasie verval en afgeskryf word;

Indicate most appropriate choice with X, thereby selecting a different choice for each;
Dui mees gepaste keuse aan met X, kies dus 'n nuwe opsie vir elkeen;

	Most Appropriate	Moderate	Least Appropriate
Abundant ordering / <i>te veel bestel</i>			
Short dated expiry / <i>kort verval datum</i>			
Incorrect ordering / <i>verkeerd bestel</i>			

Other / *Ander;*

.....

2. How often does your facility discard expired and perished medication?
Hoe gereeld skryf die fasiliteit medikasie af?

Indicate most appropriate choice with X;
Dui mees gepaste keuse aan met X;

- | | |
|-------------------------------|--------------------------|
| Daily / <i>Daaglik</i> | <input type="checkbox"/> |
| Weekly / <i>Weeklik</i> | <input type="checkbox"/> |
| Monthly / <i>Maandelik</i> | <input type="checkbox"/> |
| Quarterly / <i>Kwartaalik</i> | <input type="checkbox"/> |
| Yearly / <i>Jaarlik</i> | <input type="checkbox"/> |

3. What is the amount of expired / perished stock being discarded?
Wat behels die waarde van die afgeskryfde voorraad?

Indicate most appropriate choice with X;
Dui mees gepaste keuse aan met X;

- | | | | |
|----------|---|----------|--------------------------|
| R 0 | - | R 1000 | <input type="checkbox"/> |
| R 1000 | - | R 20 000 | <input type="checkbox"/> |
| R 20 000 | - | R 50 000 | <input type="checkbox"/> |
| R 50 000 | - | > above | <input type="checkbox"/> |

4. Please indicate with which company your facility is contracted to discard expired medication.

Dui asseblief aan met watter maatskappy die fasiliteit gekontrakteer is om vervalde medikasie te verwyder.

.....

Comments / *Kommentaar;*

.....

7. Medication Dispensing

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Implements Platinum Health Formulary. <i>Implementeer Platinum Health Formulêr.</i>							
2.	Practice generic substitution. <i>Praktiseer generiese vervanging.</i>							
3.	Diagnosis codes normally correlates with medication prescribed. <i>Diagnose kode korreleer normaalweg met voorgeskrewe medikasie.</i>							
4.	Practice cost-effective substitution. <i>Praktiseer koste-effektiewe vervanging.</i>							

1. Reasons for generic substitution;
Redes vir generiese vervanging;

Indicate most appropriate choice with X, thereby selecting a different choice for each;
Dui mees gepaste keuse aan met X, selekteer dus 'n ander opsie vir elkeen;

	Most Appropriate	Moderate	Least Appropriate
Patient requirement / <i>Pasient dring daarop aan</i>			
Doctor requirement / <i>Dokter dring daarop aan</i>			
Patient does not want a co-payment / <i>Pasient wil nie bybetaling maak nie</i>			
Implementation of formulary / <i>Implementering van formulêr</i>			

Other / *Ander;*

.....

2. When a no-stock situation occurs, what is the most appropriate action taken when stock is eventually received;

As 'n nie-beskibare voorraad situasie voorkom, wat is die gepaste metode wat gebruik word wanneer medikasie wel beskikbaar is;

Indicate most appropriate choice with X, thereby selecting a different choice for each;

Dui mees gepaste keuse aan met X, kies dus 'n ander opsie vir elkeen;

	Most Appropriate	Moderate	Least Appropriate
Deliver / <i>aflewer</i>			
Collect / <i>kollekteer</i>			
Phone / <i>telefonies</i>			

Other / *Ander;*

.....

Comments / *Kommentaar;*

.....

.....

8. Distribution of Medication

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Utilizes the Platinum Health distribution system. <i>Maak gebruik van die Platinum Health verspreiding sisteem.</i>							
2.	Audit delivery and receipts notes regularly. <i>Oudit aflewering en ontvangs notas gereeld.</i>							

1. How often does your facility utilize the Platinum Health distribution system?
Hoe gereeld gebruik die fasiliteit die verspreiding sisteem?

Indicate most appropriate choice with X;
Dui mees gepaste keuse aan met X;

- Daily / *Daaglik*
Weekly / *Weeklik*
Monthly / *Maandelik*
Quarterly / *Kwartaalik*
Yearly / *Jaarlik*

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

2. Reasons for utilizing distribution system;
Redes waarom verspreiding sisteem gebruik word;

Indicate most appropriate choice with X, thereby selecting a different choice for each;
Dui mees gepaste keuse aan met X, kies dus 'n ander opsie vir elkeen;

	Most Appropriate	Moderate	Least Appropriate
Distribute excess / short dated stock.			

<i>Versprei oortollige / vinnige vervalde voorraad.</i>			
Receiving needed or requested stock. <i>Ontvang benodigde of versoekte voorraad.</i>			
Chronic medication delivery. <i>Kroniese medikasie aflewering.</i>			

Other / Ander; (E.g. Emergency Medication / Nood Voorraad)

.....
.....

Comments / Kommentaar;

.....
.....

9. Stock Take

Please rate the following questions according to the scale on top of page 4 with relevance on your facility / *Beoordeel die volgende vrae volgens die gegewe skaal bo-aan blasy 4 met relevansie op jou fasiliteit;*

	Item	1	2	3	4	5	6	7
1.	Do weekly mini-stock takes. <i>Doen weeklikse mini-voorraad opnames.</i>							
2.	Each person is assigned to a specific bin and shelves and is kept responsible for the quality and quantity of stock on it. <i>Elke persoon kry 'n spesifieke afdeling en rakke en word verantwoordelik gehou vir die kwaliteit en kwantiteit van voorraad daarop.</i>							
3.	Mini-stock takes performed at scheduled time with minimum movement of stock. <i>Mini-voorraad opname vind plaas op geskeduleerde tyd,</i>							

	<i>wanneer beweging van voorraad so min as moontlik is.</i>							
4.	Everybody counts at the same time. <i>Almal tel gelyketyd.</i>							
5.	Data captured directly after mini-stock take. <i>Data ingelees en aangeteken direk na mini-voorraad opname.</i>							
6.	Everybody knows well in advance when the main stock take occurs. <i>Almal weet voorraf wanneer hoof voorraad opname plaasvind.</i>							
7.	Stock take takes place when pharmacy is closed. <i>Voorraad opname vind plaas wanneer apteek gesluit is.</i>							
8.	Time and duration of stock take are recorded. <i>Tyd en tydsverloop van voorraad opname word gedokumenteer.</i>							
9.	Everybody starts counting at the same time. <i>Almal begin gelyk tel.</i>							
10.	Every counter is assisted by a spot checker. <i>Elke teller word geasisteer deur 'n kontrole beampte.</i>							
11.	Financial auditor present with every stock take. <i>Finansiële ouditeur teenwoordig met elke voorraad opname.</i>							
12.	Regular spot checks are done. <i>Kontrole beampte hersien sekere getelde voorraad.</i>							
13.	Quantities are captured by pharmacists. <i>Kwantiteit en waardes word deur aptekers ingelees.</i>							
14.	Investigate variances.							

	<i>Ondersoek afwykings.</i>							
15.	Facility implements quality control procedures? <i>Fasiliteit handhaaf kwaliteit kontrole prosedures?</i>							
16.	Facility implements quality improvement procedures? <i>Fasiliteit handhaaf kwaliteit verbetering prosedures?</i>							

1. Please indicate steps taken when a variance is diagnosed;
Dui asseblief die stappe aan wat gevolg word as 'n afwyking opgespoor word.

.....
.....
.....

2. Please indicate relevant quality control procedures;
Dui asseblief die kwaliteit kontrole prosedures aan;

.....
.....

3. Please indicate relevant quality improvement procedures;
Dui asseblief die kwaliteit verbetering prosedures aan;

.....
.....

Comments / Kommentaar;

.....
.....

Please return to;

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RPM Bleskop Pharmacy

DewaldP@Angloplat.com

083 707 0055

Annexure H – Excel Representation of Statistics

* Percentage was calculated according to total respondents agreeing to relevant statement.

Figure a – Occupation Distribution

Occupation	Percentage *
Pharmacist	25
Manager	40
Pharmacy Assistant	20

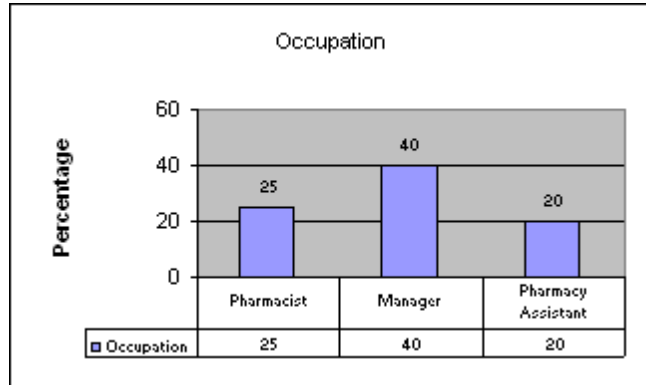


Figure b – Age Distribution

Age	Percentage *
20 - 30 years	30
31 - 40 years	40
41 - 50 years	15
above 50 years	10

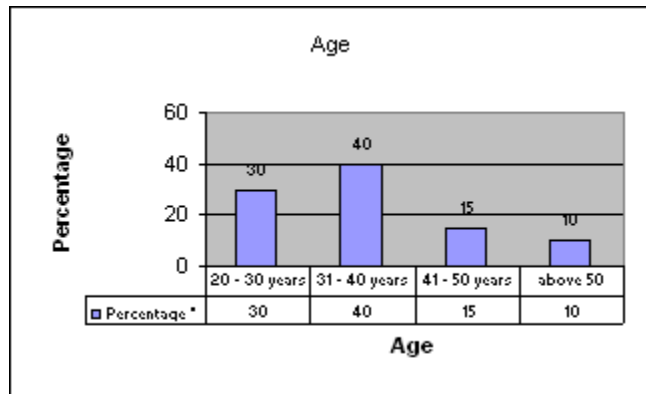


Figure c – Gender Distribution

Gender	Percentage *
Male	20
Female	75

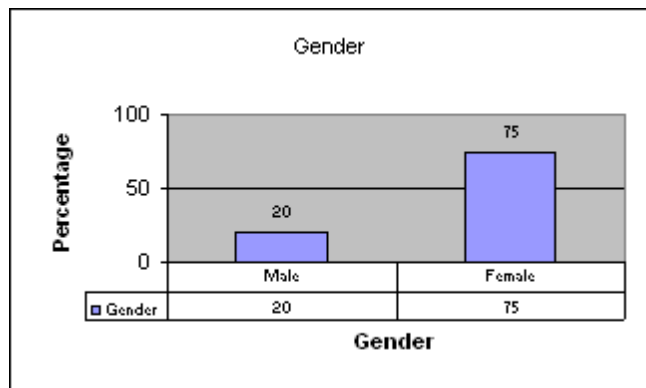


Figure d – Good Pharmacy Practice

Good Pharmacy Practice	Percentage *
1	95
2	90
3	100
4	90
5	70

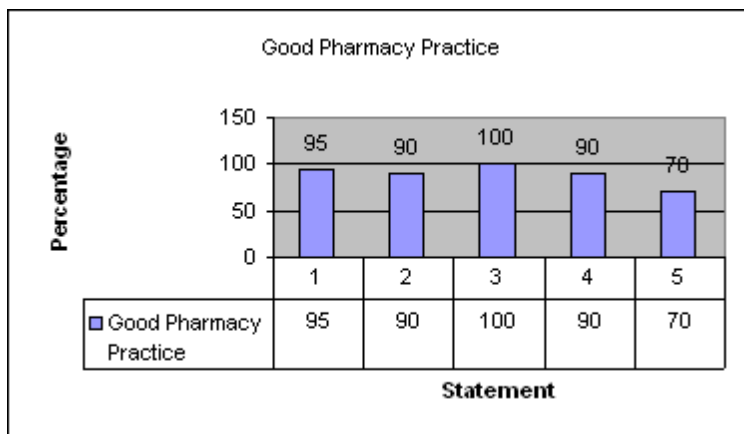


Figure e – Control over Medicine

Control over Medicine	Percentage *
1	90
2	95
3	50
4	70

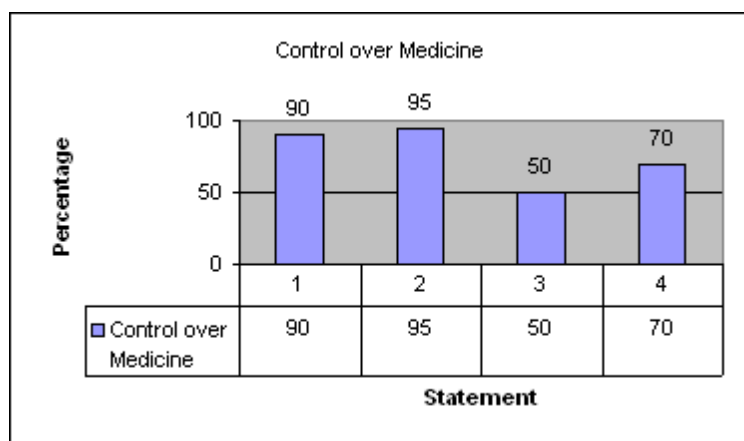


Figure f – Medicine Procurement

Medicine Procurement	Percentage *
1	85
2	60
3	80

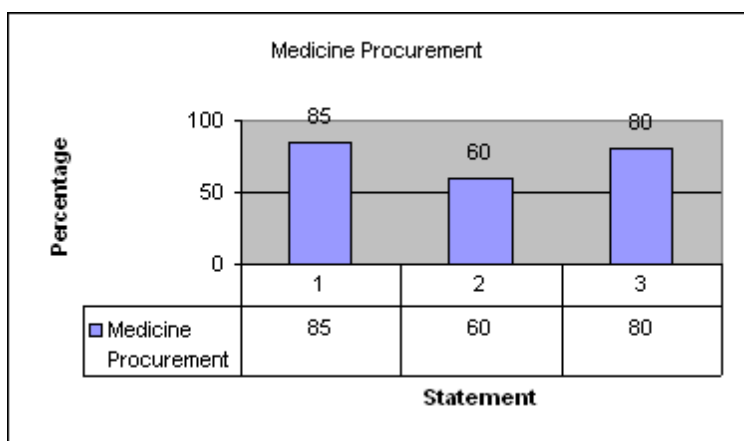


Figure g – Prescribing Medication

Prescribing Medication	Percentage *
1	85
2	70
3	95

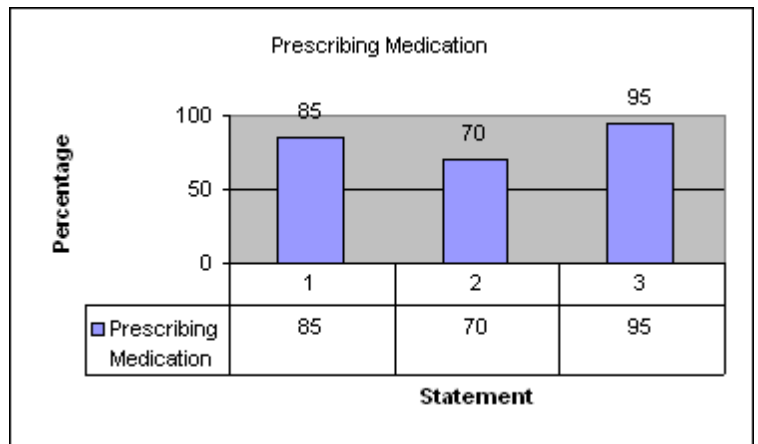


Figure h – Ordering Medication

Ordering Medication	Percentage *
1	100
2	100
3	90
4	85
5	90
6	95
7	80
8	95
9	65
10	95
11	100
12	95
13	90
14	100
15	90
16	75
17	70
18	95
19	90

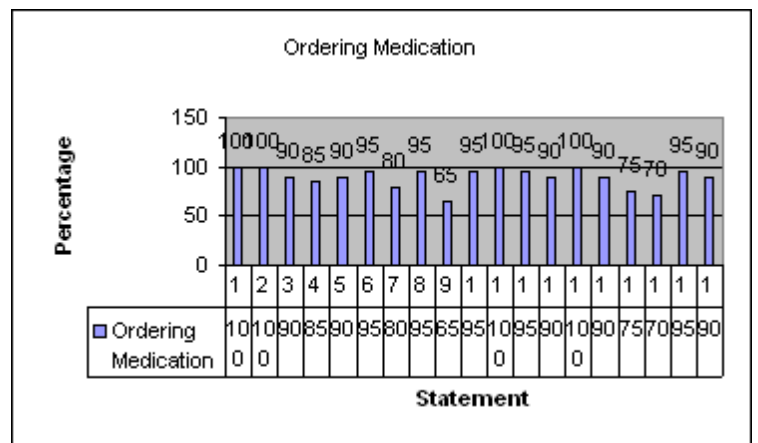


Figure i – Stock Receiving

Stock Receiving	Percentage *
1	95
2	95
3	90
4	50
5	90

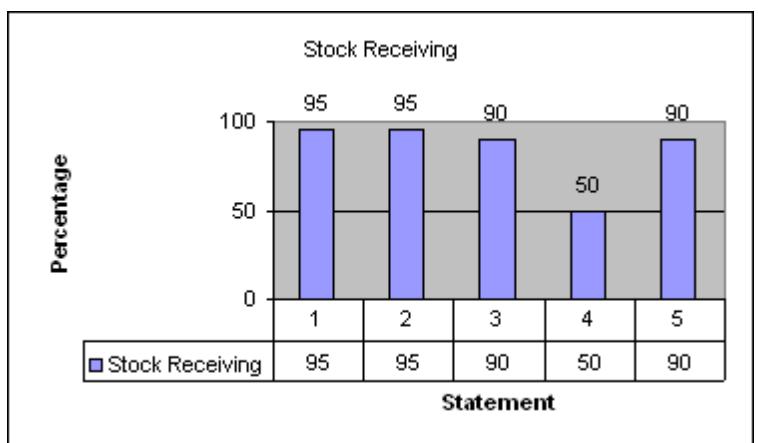


Figure j – Product Recall

Product Recall	Percentage *
1	70
2	100
3	85

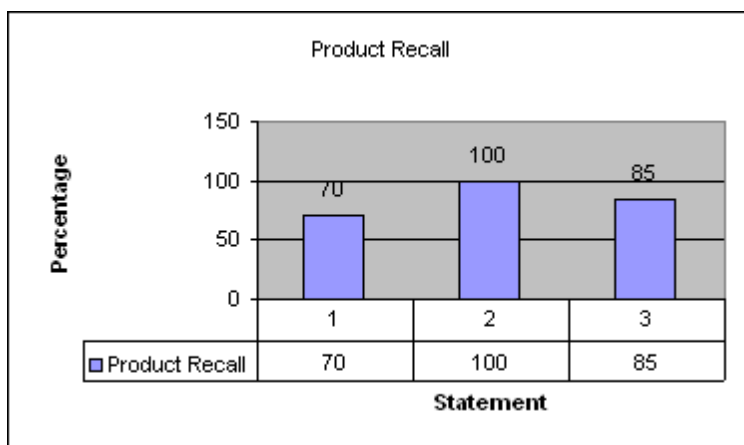


Figure k – Storage of Medication

Storage of Medication	Percentage *
1	100
2	95
3	100
4	95
5	85
6	85
7	100
8	100
9	90
10	95

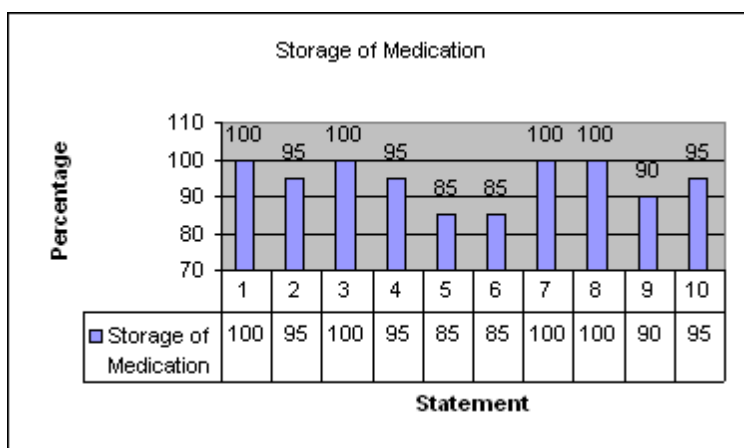


Figure l – Excess Stock

Excess Stock	Percentage *
1	85
2	85
3	90

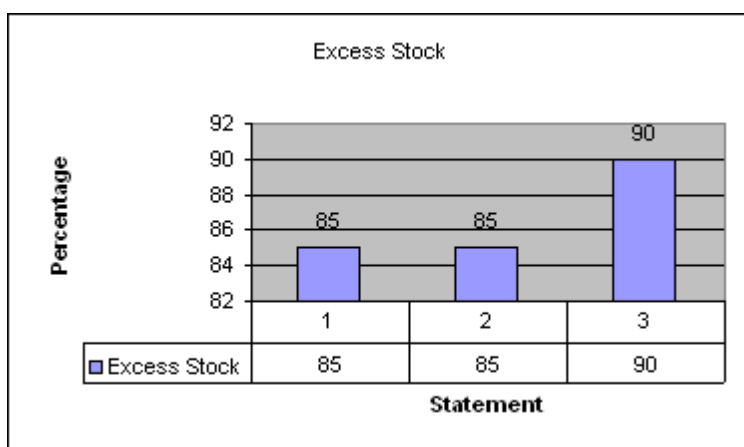


Figure m – Expired Stock

Expired Stock	Percentage *
1	95
2	80
3	95
4	15
5	90

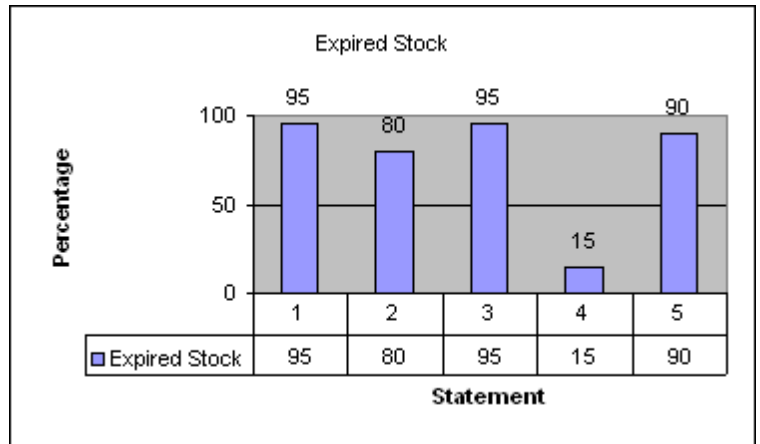


Figure n – Medication Dispensing

Medication Dispensing	Percentage *
1	95
2	100
3	75
4	100

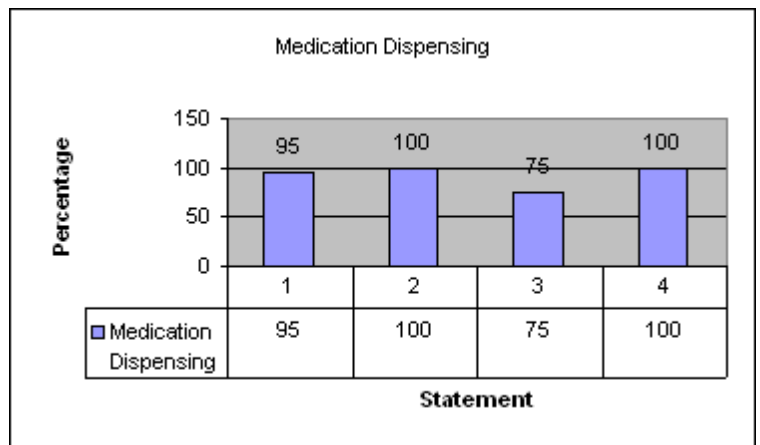


Figure o – Distribution of Medication

Distribution of Medication	Percentage *
1	100
2	75

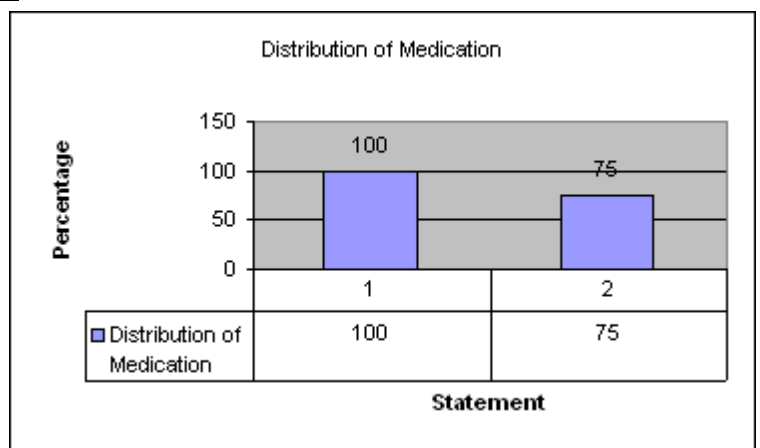
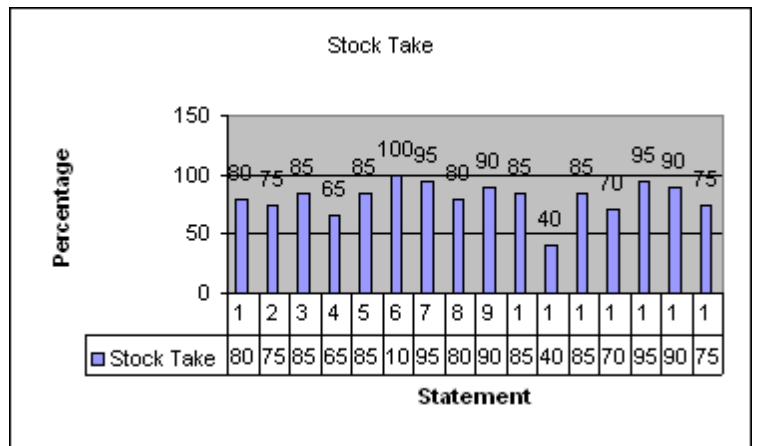


Figure p – Stock Take

Stock Take	Percentage *
1	80
2	75
3	85
4	65
5	85
6	100
7	95
8	80
9	90
10	85
11	40
12	85
13	70
14	95
15	90
16	75



BIBLIOGRAPHY

ACTS *see* SOUTH AFRICA.

ALTSCHULER, R. 2003. Do medication really expire?
<http://www.medscape.com/viewarticle/460159> Date of access: 3 Mar. 2010.

ALVORD, B. 2007. Operational effectiveness: another way of looking at performance. <http://ezinearticles.com/?Operational-Effectiveness---Another-Way-of-Looking-at-Performance&id=678999> Date of access: 20 Apr. 2010.

ANON. 2007a. Medicines distribution: an OFT market study. UK: Office of Fair Trading. 94 p. http://www.offt.gov.uk/shared_offt/reports/comp_policy/oft967.pdf
Date of access: 17 Mar. 2010.

ANON. 2007b. Stock control, quality control and quality assurance.
<http://www.bized.co.uk/educators/16-19/business/production/presentation/qualcontrol.ppt#265,4,Stock Control> Date of access: 3 Apr. 2010.

ANON. 2008. Receiving, inspection, acceptance testing and acceptance or rejection. <http://www.pd.dqs.ca.gov/deleg/PAMchapter10.htm> Date of access: 21 Mar. 2010.

ANON. 2009a. Guide to the global fund's policies on procurement and supply management. 28 p.
http://www.theglobalfund.org/documents/psm/pp_guidelines_procurement_supplymanagement_en.pdf Date of access: 21 Mar. 2010.

ANON. 2009b. Re-order level or ordering point or ordering level.
http://www.accountingformanagement.com/reordering_level.htm Date of access: 18 Feb. 2010.

ANON. 2010a. Controlled drug substance schedule vi agent. <http://medical-dictionary.thefreedictionary.com/controlled+drug+substance+Schedule+VI+agent>

Date of access: 9 Jun. 2010.

ANON. 2010b. Effective stock control system.

<http://www.bizmove.com/general/m6n.htm> Date of access: 30 Mar. 2010.

ANON. 2010c. MeL Delivery procedures.

http://mlc.lib.mi.us/cms/sitem.cfm/library_tools/mel_delivery/mel_delivery_procedures

/ Date of access: 11 Mar. 2010.

BARKER, L. 2009. What is primary data?

http://www.ehow.com/about_4685513_what-primary-data.html Date of access: 2

May 2010.

BEKKESTUA. 2003. Methodolgy and data collection.

http://www.dye.no/articles/a_glance_at_the_future/methodology_and_data_collection.html Date of access: 27 Jun. 2009.

BLACKBURN, J. 2010. Fundamentals of purchasing and inventory control for certified pharmacy technicians. 51 p.

<https://secure.jdeducation.com/JDCourseMaterial/FundPurch.pdf> Date of access: 4

Apr. 2010.

BREET, D.E. 1979. Stock control in the pharmaceutical industry, with emphasis on the forensic and good manufacturing practice aspects and their cost implications.

Potchefstroom: PU vir CHO. (Dissertation – M.B.A.) 90 p.

BRITS, Y. 2007. Development of a framework to assist with risk mitigation in a

procurement environment. Potchefstroom: PU vir CHO. (Mini-dissertation – M.B.A.)

72 p.

BYROM, B. 2002. Managing the medication using interactive voice response. *Life science today*, 3(1):16-18, Feb.

CAREY, R.G. & LLOYD, R.C. 2001. Measuring quality improvement in healthcare: a guide to statistical process control applications. Milwaukee: Quality Press.

CARR, J. 1998. Garth pig stockmanship standards: medicine control and storage. Sheffield: 5M Enterprises. 64 p. <http://www.thepigsite.com/stockstds/7/medicine-control-and-storage> Date of access: 5 Mar. 2010.

COSTA, A.L., BORGES DE OLIVEIRA, M.M. & DE OLIVEIRA MACHADO, R. 2004. An information system for drug prescription and distribution in a public hospital. *International journal of medical informatics*, 73(4):371-381, Feb.

CRICHTON, B. 2004. Keep in a cool place: exposure of medicines to high temperatures in general practice during a British heatwave. *Journal of the Royal Society of Medicine*, 97(7):328-329, Jul.

DoH **see** SOUTH AFRICA. Department of Health.

FOSTER, S., LAING, R., MELGAARD, B. & ZAFFRAN, M. 2006. Ensuring supplies of appropriate drugs and vaccines. <http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=dcp2&part=A10389> Date of access: 4 Apr. 2010.

FREE STATE (South Africa). Department of Health. 2007. Standard operating procedure for ordering of stock. Bloemfontein.

GEIMER, H. & TOMLINSON, G. 2002. The neglected pharmaceutical supply chains. *Pharmaceutical technology Europe*, 14(12):66-70, Dec.

HELA, M. 2008. Medicines control council. *Guidelines for recall / withdrawal of medicines*. <http://www.docstoc.com/docs/18574693/GUIDANCE-DOCUMENT> Date of access: 23 Feb. 2010.

HIDEO, I., YASUO, W., MASAMI, H., CHIYOJI, I. & SHOJI, A. 1995. Development and evaluation of a new automated dispensing system. *International journal of bio-medical computing*, 38(2):167-176, Feb.

HOLLOWAY, T., INNES, D., DIAKANASTASIS, M., EVANS, K. & LEABEATER, K. 2006. Receiving and storing stock. http://www.cambridge.edu.au/education/resource/sample_1_689333.pdf Date of access: 29 Jan. 2010.

- JACOBS, F.R., CHASE, R.B. & AQUILANO, N.J. 2009. Operations & supply management. 12th ed. New York: McGraw-Hill. 766 p.
- JACOBS, R.M. s.a. Educational research: descriptive research.
<http://www83.homepage.villanova.edu/richard.jacobs/EDU%208603/lessons/descripti ve.ppt> Date of access: 2 May 2010.
- JOBERT. 2002. Basic stock delivery and receiving procedures for retail operations.
<http://everything2.com/title/Stock+receiving+procedures> Date of access: 29 Jan. 2010.
- JONES. A. 2007. Stock control and inventory.
<http://online.businesslink.gov.uk/bdotg/action/printguide?r.l1=1073858805&r.lc=en&r.l3=1074039371&r.l2=1073859143&topicId=1074039371> Date of access: 3 Apr. 2010.
- KARR, A. 2000. Specialising in procurement.
<http://www.pharmj.com/Hospital/Editorial/200410/careers/p379procurement.html>
 Date of access: 21 Mar. 2010.
- KARR, I. 2008. Medicine procurement practice. 45 p.
<http://www.eahp.eu/content/download/27651/179766/file/CountryFocus45.pdf>. Date of access: 27 Sep. 2009.
- KOTELNIKOV, V. s.a. Just-in-time (JIT) production.
http://www.1000ventures.com/business_guide/im_jit_main.html Date of access: 30 May 2010.
- KUHN, T.S. 2009. Quantitative research.
<http://www.answers.com/topic/quantitative-research> Date of access: 27 Sep. 2009.
- KURATKO, D.F., IRELAND, R.D. & HORNSBURY, J.S. 2001. Improving firm performance through entrepreneurial actions: Acordia's corporate entrepreneurship strategy. *Academy of executive management*, 15(4):60-71, Nov.
- LUCAS, T.I., BISHARA, I.H. & SEEVERS, I.H. 2004. A stability program for the distribution of drug products. *Pharmaceutical technology*, 28(7):68-73, Jul.

- MOHAU DISTRICT HOSPITAL (South Africa). 2009a. Pharmaceutical service policy: distribution of medicine under the control of a pharmacist. Hoopstad.
- MOHAU DISTRICT HOSPITAL (South Africa). 2009b. Pharmaceutical service policy: stock take. Hoopstad.
- NG, D. 2010. How do I dispose of expired medication?
<http://www.wisegeek.com/how-do-i-dispose-of-expired-medicine.htm> Date of access: 3 Mar. 2010.
- OISHI, R. 2009. Current status of preparation and distribution of medicines. *American journal of health-system pharmacy*, 66(Suppl 3):S35-42, 1 Mar.
- OMBAKA, E. 2009. Current status of medicine procurement. *American journal of health-system pharmacy*, 66(Suppl 3):S20-28, 1 Mar.
- PHARMACEUTICAL SOCIETY OF AUSTRALIA. 2006. Dispensing. Canberra: Pharmaceutical Society of Australia. 49 p.
http://docs.google.com/viewer?a=v&q=cache:vln-wT4iCn0J:psanew.millpost.com.au/site.php%3Fid%3D1104+CANBERRA.+PSA,+2006.+5.+Dispensing.&hl=en&gl=za&pid=bl&srcid=ADGEEESgh65sD4JJquhRsz6RFXfb ozVAj6vJ65SNs3OZPXElpDjtYDzqP8hkzyOwncch3Jn_vHLtoDS_s6DoSvXzIVZncw LF6HSHrQ55FJsUQWQ7N8JBPVje8IiiQ6ud4ykKHaR8QWzq&sig=AHIEtbQI-k1XuSr_UTzUR_-NHivYT4IN8w Date of access: 5 Mar. 2010.
- PHARMACEUTICAL SOCIETY OF NEW ZEALAND. 2004. Assignment 1 – dispensing checklist. 5 p.
<http://www.psnz.org.nz/public/evolve/manual/documents/assignment1.pdf> Date of access: 17 Feb. 2010.
- PLATINUM HEALTH. 2007a. Standard operating procedure: procedure for delivery of medicines. Rustenburg.
- PLATINUM HEALTH. 2007b. Standard operating procedure: procedure for effective stock rotation. Rustenburg.

PLATINUM HEALTH. 2007c. Standard operating procedure: procedure for generic substitution on prescriptions in a pharmacy. Rustenburg.

PLATINUM HEALTH. 2007d. Standard operating procedure: procedure for medicines recall. Rustenburg.

PLATINUM HEALTH. 2007e. Standard operating procedure: procedure for procurement of medicines. Rustenburg.

PLATINUM HEALTH. 2007f. Standard operating procedure: procedure for products requiring special handling. Rustenburg.

PLATINUM HEALTH. 2007g. Standard operating procedure: procedure for receiving goods. Rustenburg.

PLATINUM HEALTH. 2007h. Standard operating procedure: procedure for removal of expired, damaged and / or contaminated stock. Rustenburg.

PLATINUM HEALTH. 2007i. Standard operating procedure: procedure for stock taking. Rustenburg.

PLATINUM HEALTH. 2010. Information guide 2010: Platinum Health. Rustenburg. 44 p.

PUTTER, S. & HATTINGH, D. 1997. Good pharmacy practice manual. 1st ed. Pretoria: Interim Pharmacy Council of South Africa. 95 p.

REH, F.J. 2010. You can't manage what you don't measure. <http://management.about.com/od/metrics/a/Measure2Manage.htm> Date of access: 27 May 2010.

ROWLING, M. & COOK, P. 2000. Control store security and loss: stock taking procedures. <http://online.cit.act.edu.au/toolboxes/C4Retail/index.htm> Date of access: 30 May 2010.

- RYBACKI, J.J. 2008. Considerations when prescribing medication.
<http://www.americanheart.org/presenter.jhtml?identifier=81> Date of access: 17 Feb. 2010.
- SEARS, L. 2009. Inventory management – a financial perspective.
<http://www.slideshare.net/lynnmsears/inventory-management-a-financial-perspective>
Date of access: 20 Apr. 2010.
- SHANE, R. 2009. Current status of administration of medicines. *American journal of health-system pharmacy*, 66(Suppl 3):S35-42, 1 Mar.
- SHEPARD, C., MALARKEY, A. & GILL, N. 2006. Retail pharmacy; industry vitals. 10 p.
<http://www.kordamentha.com/downloads/ResearchUnit/Publication%20606%20-%20Retail%20Pharmacy%20-%20Industry%20Vitals%20-%20June%202006.pdf>
Date of access: 21 Mar. 2010.
- SILBIGER, S.A. 2008. The 10-day MBA: a step-by-step guide to mastering the skills taught in top business schools. London: Piatkus Books. 420 p.
- SMITH, M.T. 2010. Lead time definition. http://elsmar.com/Lead_Time/sld006.htm
Date of access: 9 Jun. 2010.
- SOUTH-AFRICA. 1965. Medicines and Related Substances Control Act 101 of 1965. 31 p.
<http://www.bhfglobal.com/files/Medicines%20and%20Related%20Substances%20Control%20Act%20101%20of%201965.pdf> Date of access: 9 Feb. 2010.
- SOUTH AFRICA. 1974. Health Professions Act 56 of 1974. Pretoria. Government Printer.
- SOUTH AFRICA. 1974. Pharmacy Act 53 of 1974. Pretoria: Government Printer.
- SOUTH-AFRICA. 2008. Good pharmacy practice manual. 3rd ed. Pretoria: The South African Pharmacy Council. 233 p.

SOUTH-AFRICA. Department of Health. 1994. National drug policy for South Africa. 31p. <http://www.doh.gov.za/docs/policy/drugsjan1996.pdf> Date of access: 4 Apr. 2010.

SPSS. (2009). SPSS® 17.0 for Windows, Release 17.0.0. Chicago, IL:SPSS Inc. www.spss.com

STOPPLER, M. & HECHT, B.K. 2009. Generic drugs, are they as good as brand names? <http://www.medicinenet.com/script/main/art.asp?articlekey=46204> Date of access: 5 Mar. 2010.

VALENTINE, J.C. 2010. Methods, quantitative. <http://www.encyclopedia.com/doc/1G2-3045301533.html> Date of access: 2 May 2010.

WIND, K. 2003. Royal Bournemouth & Christchurch hospitals pharmacy: inventory management policy. <http://www.pasa.nhs.uk/pasa/Doc.aspx?Path=%5BMN%5D%5BSP%5D/Products%20and%20Services/Pharmaceuticals/PSCP/Inv%20Man%20Policy%20RBCH%20Pharmacy.doc>. Date of access: 31 Mar. 2010.