An investigation into the supply chain and procurement processes of a provincial department of health

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I give God our heavenly father all the honour for giving me the opportunity, the ability, for being my strength and without whom none of this would have been possible.

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ABSTRACT

Title: Investigating the supply chain and procurement processes of a provincial department of health

KEYWORDS: Supply chain; Fixed-dose ARVs; North West province; procurement

The supply chain of certain critical medicines is under pressure due to stock shortages. Consumers feel the effect of these stock shortages, specifically those with life-threatening diseases such as TB and HIV.

A pharmaceutical supply chain is very complicated and is responsible for ensuring that the appropriate drug reaches the right people at the right time. It is a highly sensitive supply chain and a 100% customer satisfaction level is not negotiable as services directly influence health and safety. In the South African healthcare environment, the medicine selection and procurement processes vary considerably between the South Africa private and public healthcare sectors.

The medicine supply chain plays an important role throughout the entire healthcare value chain. If the supply chain is ineffective, the end-user or patients suffer. Drug shortages are a reality in today’s healthcare environment and it is therefore of utmost importance that the drug supply chain is as effective as possible and possible areas of waste are eliminated. The reality is that little is known about the medicine supply chain. The goal of this study is to analyse some of the social commentary that is available regarding the medical supply chain and to convert it to empirical evidence. Fixed-dose ARVs play a very important role in the quality of life of an HIV-infected patient. The usage of Fixed-dose ARVs in South Africa is very high due to the high HIV-infection rate in the country. Internationally and nationally, literature indicates the ineffectiveness of the drug supply chain and comments on how it influences the supply of for example Fixed-dose ARVs to patients who are in dire need of it.

The data gathered during the interviews indicate that there has been a massive improvement in the supply of the Fixed-dose ARV to primary healthcare centres in the entire North West province. The provincial department of health implemented measures to ensure that the stock outs that occurred in previous years were eliminated. It was furthermore evident from the research that with the new courier type services that had been implemented, the element of patient adherence was not thought through. Although the medication is available for the patient for use, there is no measure for patient adherence.
Limitations to the study were identified and discussed. The study also provides recommendations to the provincial department of health and for future research.
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<tr>
<td>ARV</td>
<td>Antiretroviral drugs</td>
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<td>ART</td>
<td>Antiretroviral Therapy</td>
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<td>DoH</td>
<td>Department of Health</td>
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<td>DHIS</td>
<td>District Health Information System</td>
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<td>EDL</td>
<td>Essential Drug List</td>
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<tr>
<td>EML</td>
<td>Essential Medicine List</td>
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<tr>
<td>FDC</td>
<td>Fixed-dose Combination</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
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<td>NHI</td>
<td>National Health Insurance</td>
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<td>NWDoH</td>
<td>North West Department of Health</td>
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<td>PHC</td>
<td>Primary Healthcare</td>
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<td>SCM</td>
<td>Supply Chain Management</td>
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<td>SC</td>
<td>Supply Chain</td>
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<tr>
<td>STG</td>
<td>Standard Treatment Guidelines</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<td>WHO</td>
<td>World Health Organization</td>
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CHAPTER 1: NATURE AND SCOPE OF STUDY

1.1 INTRODUCTION

According to the South African Minister of Health, Dr. Aaron Motsoaledi, “South Africa has a quadruple burden of disease, namely a very high prevalence of HIV and AIDS which has now entered into a synergistic relationship with TB; maternal and child morbidity and mortality; exploding prevalence of non-communicable diseases mostly driven by risk factors related to lifestyle; and violence, injuries and trauma” (Department of Health, 2011:1).

South Africa’s healthcare system takes the form of a two-tier system:

- The private healthcare sector caters for 20% of the South African population and is funded by medical insurance;
- The public healthcare sector supports 80% of the population. Services are free at PHC level, but patients are charged at secondary and tertiary levels proportional to income (Patel et al., 2009:549).

These two sectors are both dependent on the pharmaceutical industry to some extent. The pharmaceutical market in South Africa is the largest in Sub-Saharan Africa; it is fairly well developed and totalled an estimated $3.9 billion in 2013. Government price regulations have constrained revenue growth, slowing the economic growth and leading to the subsequent weakened purchase power of most of the population. It is expected that these trends will continue in 2014–2018. It is anticipated that the market will grow by an average of six percent a year, to an estimated $5.1 billion (Deloitte Report, 2015). As is the case with many developing countries, the South African pharmaceutical industry faces many significant developments and new challenges. An example of some of these challenges and developments include the growth of generic medicine and the proposed National Health Insurance (NHI) scheme, which is set to have major implications for the pharmaceutical industry. In addition to this, increased regulation and legislation, such as single exit price, the dispensing fee, the Consumer Protection Act (68/2008) and the Medicines and Related Substances Control Act (101/1965) will continue to impact on the marketing, distribution and packaging of pharmaceuticals (Tsoku, 2014:32).

A pharmaceutical supply chain involves the integration of all activities associated with the flow and transformation of drugs, starting from raw materials through to the end user, as well as associated information flows. The three major players in the pharmaceutical supply chain are the producers, purchasers and pharmaceutical providers. The producers consist of pharmaceutical companies, medical-surgical product companies, and device manufacturers.
The purchasers include grouped purchasing organizations (GPO), pharmaceutical wholesalers, medical surgical distributors, independent contracted distributors and product representatives. Providers include hospitals, hospital systems, integrated delivery networks (IDNs), and alternative site facilities.

1.1.1 Background to the research area

In the South African healthcare environment, the medicine selection and procurement processes vary considerably between the South African private and public healthcare sectors. In the private healthcare sector, which caters predominantly for the approximately eight million inhabitants who are beneficiaries of medical schemes (private insurance), medicine selection is largely in the hands of individual prescribers, although some managed care interventions (such as formularies and treatment guidelines prescribed by funders) do exist. By contrast, the public sector in South Africa bears responsibility for the provision of healthcare services to the balance of approximately 42 million inhabitants who do not have private insurance. In this sector, a national essential medicine list (EML), with accompanying extensive standard treatment guidelines (STGs), is in place and procurement is by local competitive bidding (tender), renewed every two years. Accordingly, in the public sector, there is usually only one contracted supplier of each medicine, unless the tender has been split between different suppliers. In the event of a shortage, the options for obtaining alternative supplies may be limited. The ability to procure alternative supplies is also limited by the volumes required to meet the needs of the public sector (Gray, 2014:209). In 2013 during a crisis of drug shortages, the National Department of Health tried to source and install a countrywide computer software system that would have linked healthcare facilities with drug depots and suppliers in order to relieve ongoing essential drug-outs which threaten the lives of thousands of patients. The issue has become a national crisis, affecting districts in 8 of the 9 provinces (Bateman, 2013:600-601).

According to Uthayakumar et al. (2013:52), the careful management of pharmaceutical supplies is directly related to a country’s ability to address public health concerns. One of the most important managerial issues in the healthcare industry is the management of pharmaceutical supplies.

The procurement process refers to the acquisition of medicines at the best possible cost in the right quantity, at the right time, in the right place and from the right source. An effective procurement process ensures the availability of the right medicines in the right quantities, available at the right time, for the right patient, at reasonable prices and at recognizable standards of quality. Procurement is not simply the act of buying, but encompasses a complex range of operational, business, information technology, safety and risk management and legal systems, all designed to address an institution’s needs (Ombaka, 2009:S20).
procurement system should therefore promote the development and maintenance of a strong supply and distribution infrastructure in South Africa by ensuring that a stable, sustainable and predictable market emerges that does not place unforeseen burdens on funding or delivery system stakeholders (PIASA, 2011:31).

It has long been known that South Africa is greatly affected by Human Immunodeficiency Virus (HIV) infection and the diseases that often co-appear, such as Tuberculosis (TB). Efforts to address this scourge depend greatly on the availability of proper medical care. The Stop Stock Outs Report (SSP, 2014) goes as far as viewing the availability of proper medical care as a right.

The supply chain of certain critical medicines is under pressure due to stock shortages. The effect of these stock shortages is heavily felt by the consumer, specifically those with life-threatening conditions such as TB and HIV infection. On 24 May 2015, South Africa’s Minister of Health acknowledged the drug stock outs of certain essential medicines, and that the drug stock outs across South Africa are often caused by manufacturing challenges (SSP, 2014). The SSP report, however, indicated that only 20% of the reported drug shortages were caused by manufacturing issues. Instead, the SSP found that the remaining 80% of cases were caused by management and logistical challenges between the medicine depot and clinics at provincial and district levels. Some of these issues include incorrect quantities of drugs being ordered by clinics, inaccurate forecasting of drugs per population, and poor stock management at facility level.

The Stop Stock Outs Report mentioned that the National Department of Health’s commitment to solving the problem is the key to reducing stock outs, but it requires implementation and commitment at province, district and facility level. The problem goes well beyond the sole responsibility of the minister and requires action from all across the supply chain, from the Ministry to local clinic managers and all the way to patients who can help by reporting the stock outs they witness to the Stop Stock Outs project hotline (SSP, 2014).

1.1.2 Literature review

The World Health Organization (WHO) described six building blocks that describe a health system. These six building blocks include (i) service delivery, (ii) health workforce, (iii) health information systems, (iv) access to essential medicines, (v) financing, and (vi) leadership and governance (WHO, 2010:9).

WHO (2010:9) further explains that these six building blocks contribute to the strengthening of the health systems. Some crosscutting components, such as leadership/governance and health
information systems, provide the basis for the overall policy and regulation of all the other building blocks identified. The key input components to the healthcare system include financing and the health workforce. The last building blocks refer to the immediate outputs of the health system, in other words the availability and distribution of care (WHO, 2010:9).

However, many of these building blocks are not in place. Gray (2014:208) comments as follows on the situation: “Shortages of medicine, unrelated to inefficiencies in the procurement and distribution system, have been documented for more than a decade in the United States of America. Medicine shortages in the US and Canada have predominantly involved generic versions of injectable medicines in a narrow range of pharmacological categories. However the situation on a global level is far more mixed, other categories of ‘fragile’ markets have been identified, such as the paediatric dosage forms for Human Immunodeficiency virus / Acquired Immunodeficiency syndrome.”

Contributing factors include a shortage of pharmacists, protracted labour disputes, dismal management, corruption and woeful communication between suppliers, depots and facilities. Reports from HIV clinicians and fieldworkers, plus a collective probe by 4 influential NGOs, reveal that only adept clinical management of patients is preventing the emergence of widespread drug resistance and a rise in morbidity and mortality. Another NGO probe found out that at national level, mismanagement of healthcare facilities led to a chronic cycle of over-ordering by health facilities as a result of poor stock-keeping, the probe also found out that it’s not only HIV and TB drugs running out across provinces, but also a wide range of essential medicines (Bateman, 2013:600-601).

On the 14th of April 2015, the Financial Mail gave an overview of some departments in the North West province that had been put under administration. The Premier of the North West province, Supra Mahumapelo, said that the departments of Health, Public Works and Roads and the Education and Sports Development will have their affairs co-managed by provincial treasury because of financial instability and the mismanagement of budgets. Mr. Mahumapelo said that the problem within these departments had led to creditors not being paid. In the 2014/2015 financial year, the North West Health Department tabled a budget of R8bn (Anon, 14 April 2015). In another report it was determined that by the end of the 2014/2015 financial year, the North West Department of Health’s (NWDoH) accruals were in excess of R600 million and that the amount had to be covered by the 2015 budget. In an effort to manage the expected budget deficit, the NWDoH implemented a number of cost saving measures. Many of these measures focused on improving efficiency and this involved embargos on the appointment of new staff, normal maintenance of physical infrastructure and on the purchase of equipment (Rural Health Advocacy Project).
1.1.3 Motivation of topic actuality

The medicine supply chain plays an important role throughout the entire healthcare value chain. Drug shortages are a reality in today’s healthcare environment and it is therefore of utmost importance that the drug supply chain is as effective as possible and possible areas of waste are eliminated. The reality is that little is known about the medicine supply chain and the goal of this study is to analyse some of the social commentary that is available regarding the medical supply chain and to convert it to empirical evidence. This empirical evidence will assist researchers in gathering results that will provide the public and private healthcare community with an idea of how the National Health Insurance can ultimately be integrated.

1.2 PROBLEM STATEMENT

A national stock outs survey undertaken by the Stop Stock Outs Project (SSP) over the fourth quarter of 2014, found that five of the nine provinces (Mpumalanga, North West, Limpopo, Free State and Eastern Cape) are severely affected by drug shortages, with more than one in three facilities reporting a stock out of at least one ARV or TB medicine during the three month period of the survey. Thirty-two per cent of reported ARV or TB stock outs lasted for more than one month; 43 % lasted between one and four weeks; and 25 % lasted less than one week nationwide. Across the country, at least one childhood vaccine, including Measles, Pentaxim and Rotavirus were also reported out of stock in 12 % (249/2157) of the facilities. These results show that most medicines are available in South Africa’s medicine depots, but patients are unable to get their prescriptions fully filled at health facilities because of downstream logistical and management problems. The North West province has had the most significant increase from 4 % (8/182) in 2013 to 39 % (86/222) in 2014 in facilities reporting stock outs. The Bonjanala district was the most affected area. Adult ARV’s were the most commonly reported treatment out of stock (SSP, 2014).

Fixed-dose ARVs play a very important role in the quality of life of an HIV-infected patient. The usage of Fixed-dose ARVs in South Africa is very high due to the high HIV-infection rate in the country. Internationally and nationally, literature indicates the ineffectiveness of the drug supply chain and comments on how it influences the supply of for example Fixed-dose ARVs to patients who are in dire need. Healthcare services, especially Primary Healthcare services in a country like South Africa, are very complex. There is minimal scientific evidence from literature that describes the drug value chain thoroughly. Before any recommendations can be made regarding the improvement of the drug value chain with regard to Fixed-dose ARVs on a Primary Healthcare Clinic level, it is wise to first view the situation out of an emic perspective to better understand the complexities of the value chain of the Fixed-dose ARVs in a Primary Healthcare Clinic in the North West province of South Africa. An emic perspective refers to
relating or involving analysis of the thoughts and experiences of the people who are affected by the issue being studied.

**1.3 RESEARCH OBJECTIVES**

**1.3.1 Primary objective**

The aim of this research is to make recommendations regarding the supply chain and procurement processes of a provincial department of health by exploring the supply chain and procurement processes of the Fixed-dose ARVs so that possible areas of waste can be identified and action can be taken to eliminate these areas of waste.

**1.3.2 Secondary objective**

To explore and describe the realities of the value chain and procurement processes of Fixed-dose ARVs in a Primary Healthcare setting in a provincial department of health in order to formulate recommendations for the provincial department of health regarding the optimal value chain of Fixed-dose ARVs.

**1.4 SCOPE OF THE STUDY**

This study focuses on the supply chain and the procurement of Fixed-dose ARVs for a Primary Healthcare clinic situated in the Dr. Kenneth Kaunda district within the North West province of South Africa. Evaluating the supply chain will lead to the identification of possible areas of waste by using various lean tools as applicable to the supply chain.

**1.5 RESEARCH METHODOLOGY**

The research methodology is outlined below as the research design and the research methods.

**1.5.1 Research design**

A qualitative approach was applied in the research design as it best serves the objective of this study. Welman, Kruger and Mitchell (2005:193) describe qualitative research as "an essential descriptive design which is used in investigations amongst individuals or groups within a given community, group or organization." A qualitative research design is appropriate for the study as the researcher wants to comprehend the challenges that the health system experiences in the supply chain and with the procurement of critical medical supplies and the eventual service that is delivered to the end consumer (the patient). The research design is interpretive as the researcher intended to explore the subjective views of the participants to generate interpretative descriptions (Thorne, Reimer-Kirkham & Flynn-Magee, 2004:2). This research approach
enabled the researcher to explore the participants' point of view in depth as the unstructured interview was applied to gather information. This qualitative method gave scope for explorative questions from the researcher and initially presented the participants with open-ended questions.

1.5.2 Research method

The research method is described with reference to data collection and data analysis.

1.5.2.1 Data collection

The researched identified the population as the various role players responsible for the supply chain and procurement of various medical supplies in the NWDoH. These role players include the Director of Pharmaceutical Services of the NWDoH, the District Pharmacist of the Dr.Kenneth Kaunda District, the sub-district pharmacist of the Dr.Kenneth Kaunda District and two nurses working at a Primary Healthcare Centre in the Dr. Kenneth Kaunda District. This enabled the researcher to gain access to the participants’ views on the challenges related to the supply chain of medicine and medical supplies at a provincial, district or sub-district level.

Purposeful selection is used mostly in qualitative research where the researcher aims to get in-depth and new important information (Thorne, Reimer-Krikham & O’Flynn-Magee, 2004:6). The purposeful selection was guided by the inclusion criteria, which entailed willingness to participate voluntarily, fluency in English or Afrikaans and a working knowledge of the supply chain and procurement processes within the department. The sample size was determined by data saturation, which refers to the point where no additional new information came from the collection process (Bowling, 2009:410). The method of data collection was individual, unstructured interviews. A few open questions activated the interview, namely “What are the realities of the value chain and procurement processes of Fixed-dose ARVs in a Primary Healthcare setting in a provincial department of Health?”

1.5.2.2 Data analysis

Interviews were digitally voice-recorded for transcription and analysis and to ensure that the data could not be distorted in any way during transcription. Analysis of the data was done by coding to explore phenomena in depth by following Creswell’s (cited by Botma et al., 2010:224) steps as listed below:

- **Step 1 Organize and prepare data:** Transcribe interviews.
- **Step 2 Develop a general sense:** Read through all the data, obtain a general sense of the information and reflect on the overall meaning.
- **Step 3** **Code the data:** Activate a coding process by using emerging information from the participants.

- **Step 4** **Describe and identify themes:** Use the coding process to generate a description of the setting or people and themes from categories.

- **Step 5** **Represent findings:** Findings are represented in a narrative way to convey the research findings. This includes a detailed discussion of themes and interconnected themes.

- **Step 6** **Data interpretation:** Data are interpreted.

### 1.6 PLAN OF THE STUDY

The outline of the study is as follows:

**Chapter 1:** **Nature and scope of study**

Chapter 1 offers an introduction to the field of study and some background information on the medical supply chain and the healthcare market.

**Chapter 2:** **Literature study**

Chapter 2 gives an overview of technical aspects such as supply chain management and the various lean tools that can be utilized. It includes a brief description of the healthcare market and challenges that healthcare facilities face in terms of drug shortages. Some information on the regulatory authorities and their role in supplying medicine and related consumables to the various healthcare facilities within their area of interest is discussed.

**Chapter 3:** **Practical study and implementation**

Chapter 3 discusses the current scenario regarding the supply chain and the challenges faced in terms of drug shortages. Information has been gathered via a standard open-ended interview with relevant role players in the local health authority.

**Chapter 4:** **Conclusions and recommendations**

Chapter 4 identifies the possible shortcomings of the study and presents the results obtained from the interview. The results are interpreted and a conclusion about the current situation regarding the supply and distribution of medicine follows.
CHAPTER 2: LITERATURE STUDY

2.1 INTRODUCTION

The importance of Supply Chain Management (SCM) is widely recognized. The South African Department of Health comments as follows in the Supply Chain Management Review (2015):

"One of the key mechanisms enabling government to implement policy is supply chain management. The negative effects of inefficient public sector SCM, particularly in the procurement phase of the chain, are well documented. Optimization of SCM is some of the major research themes in process operations and management for all sectors within the service, retail and manufacture environments. Some of the research that is currently conducted and areas that are improved continuously include capacity and production planning, facility location and design, logistic networks, inventory and warehouse management, and all other areas aiming to pursue strategic supply chain management. Some of the difficulties for a government pharmaceutical supply chain, is that only a handful of these areas can be addressed, since resource allocation and funding are fixed and is insufficient to address all these supply chain issues. Some of the interventions that have been made by the National Department of Health and some external entities increase the complexity of the pharmaceutical supply chain (Kachwee & Hartmann, 2013:511-2).

2.2 SUPPLY CHAIN MANAGEMENT

The supply chain is divided into core and extended functions. The core functions of the Supply Chain (SC) are related to activities which are restricted to the four walls of the organization. These activities form part of the supply chain management (SCM) space. The extended functions of the SC are those activities or functions which are extended vertically at either end (suppliers or customers) of the organizations, therefore creating an extended SC and the enablement of collaboration where applicable (Kachwee et al., 2013:511-3).

Figure 2-1: The Supply Chain Landscape

Source: Kachwee et al, 2013:511-3
The term supply chain describes the links and interrelationships among the many organisations, people, resources, and procedures involved in getting drugs to patients. A typical supply chain would include partners from manufacturing, transportation, warehousing and, service delivery (Shamima, 2012:14). Delivery and distribution of drugs at various levels are not possible without effective drug procurement and inventory control. Drug Supply Management tools help managers with the process of distributing drugs and supplies to clinic facilities and ultimately to patients, through following a series of steps including forecasting needs, the tender process, ordering, receiving, storing / warehousing and distribution (Mohammad & Raja, 2005). The supply chain is one of the major components that directly influences the efficiency of a healthcare system (Liebenberg, 2011:9).

The following factors may impede Drug Supply Chain Management:

- The lack of infrastructure for storage and distribution of drugs
- The lack of dedicated transport to ensure constant drug supply
- Losses from expiration, theft, fraud and inappropriate storage
- Inaccurate forecasting of drug requirements due to non-adherence to drug re-order levels (Dukes et al., 1997).

The concept of full supply of a drug is not always applied and many countries manage drug supplies by rationing systems. However in the case of HIV treatment, rationing systems cannot be used and once a patient is placed on treatment, there must be uninterrupted supply of drugs. Rationing could easily lead to treatment failure, drug resistance and a host of other problems which would ultimately have a huge negative global impact. Ensuring full supply of drugs can be costly and requires additional strategies to optimize the use of resources (Mohammed & Raja, 2005).

Some strategies for improving full supply of drugs include:

- Maximise all sources of funding through better co-ordination
- Provide full and continuous treatment to fewer patients
- Partner with manufacturers in providing timely forecasts and reducing uncertainty in planning and unplanned costs
- Purchase in bulk to obtain better prices where possible
- Make the supply chain efficient resulting in fewer inventories tied in safety stock. This may require shortening the pipeline and delivering directly to the service delivery site and not through intermediary warehouses
- Reduce loss and pilferage by implementing a security system across the supply chain
- Standardise and limit the number of drugs and supplies in the system
- Reduce duplicative drugs and supplies
- Implement an automated logistics information management system that tracks stock levels and consumption patterns, making inventory transparent through the system
- Monitor the use of drugs and supplies (Mohammed & Raja, 2005).

The implementation of lean philosophies in various industries have enabled organizations to become more customer-focused, flexible and profitable. The reduction of various forms of waste in a supply chain allows for the building of adaptive, collaborative supply chains (Kachwee et al., 2013:511-4). According to Hartzenberg (2002:2-3) up until 1993 the South African pharmaceutical supply chain followed the traditional, and still predominant, international model. According to this model, multinational pharmaceutical companies features predominantly in the production stage of the supply chain, where distribution of pharmaceutical products is conducted by independent wholesalers, who buy stock for their own account from manufacturers, and then sell it to retailers. Wholesale distribution of pharmaceutical products is either done either by full-line or short-line wholesalers. Full-line wholesalers distribute the full range of available pharmaceutical products, and short-line wholesalers trade in a selection of products only. The pharmaceutical supply chain is usually described as a producer-driven one, despite the specific consumer demand characteristics, especially evident in the private segment of the healthcare market.

According to Kachwee et al (2013:511-5), pharmaceutical supply chain includes:

i. National Health is responsible for the offering of tenders
ii. Provincial Health is responsible for the tender selection process
iii. Suppliers is the supply of original pharmaceutical medication (OPM) and generic pharmaceutical medication (GPM) to the Medical Supply Depot
iv. Medical Supply Depot (MSD) is Gauteng’s centralized procurement department responsible for ensuring the management of supplier contracts and the distribution of pharmaceuticals to provincial hospitals from their base in Auckland Park
v. The hospitals is responsible for the dispensing of medication to consumers
The World Health Organization defines access to medicine as a priority for citizens. This means that medicine should be available at all times and in adequate amounts, in appropriate dosage and quality and at an affordable price for individuals and communities (Yadav, Lega Tata and Babalay, 2011). Globally Health systems faces challenges with rising drug costs, decisions regarding the implementation of new drug therapies or using conventional drug therapies, access to drugs across different income groups and geographical barriers. Medicine is the second largest expenditure item in the health system, thus managing drug supply is essential and managers should focus on procurement, selection, distribution and to ensure that there is an uninterrupted supply of medicine (Van der Westhuizen, 2011). Embrey (2012:2) explains that the management of drug supply involves four functions of the drug management cycle as depicted in Figure 2.3:

- Selection;
- Procurement;
- Distribution; and
- Use.

Selection in the drug management cycle refers to the process of determining the treatment of choice, selecting the drug and dosage forms and deciding which essential drugs will be available at the different levels of healthcare. Procurement establishes the quantity and quality of the required drugs, contract terms, tender processes, methods for procurement processes and defines which drugs are most effective to control drug expenditure. Distribution in the drug management cycle includes delivering from depots to health facilities and to manage stores. Management of medicinal stores are crucial for distributing essential drugs towards healthcare facilities. Use is the prescribing, diagnosing and dispensing of drugs thus ensuring patient compliance (Embrey, 2012:8).
South Africa uses a closed system for drug procurement in the public sector. The tender process is managed at a national level, while provinces get a chance to provide their input. Provinces acquire medicines by quantifying their drug requirements derived on the EDL and request drugs that are not on the list. Once the tenders are awarded, provinces are informed of the preferred suppliers. The provinces purchase their medicines directly from these suppliers. All public-sector institutions procure essential drugs through the public tender system (Patel et al., 2009:549). Drug procurement and distribution to the public sector is limited to drugs on the EDL and products registered for use in South Africa. Medications go to provincial depots, where they are repacked into patient-ready packs. These units then go out to the district hospitals. The district hospital in turn sends medication to the PHC facilities. The packs are labelled with the trade name and the generic name directly above or under the trade name (Department of Health, 1996b).
According to Pharasi and Miot (2012) the efficacy of the pharmaceutical supply system is measured as follows: "The litmus test of the efficacy of any public sector's pharmaceutical supply system is the availability of medicine in Primary Healthcare facilities. Monitoring of availability at primary care facilities remains a challenge that needs to be addressed at district and provincial levels.

The goal of the medicine procurement system should therefore be to promote the development and maintenance of a strong drug supply chain and distribution infrastructure in South Africa by ensuring that a stable, sustainable and predictable market emerges that does not place unforeseen burdens on funding or delivery system stakeholders. The performance of government's central medical stores and appointed agencies should be optimized by:

- Implementing and monitoring standard operating procedures applicable to the specific institutional circumstances and market conditions under which the distribution system must operate;
- Ensuring that senior management are appropriately qualified for medicine procurement and distribution, which is a highly specialized professional activity;
- Implementing adequate personnel recruitment, training and management policies;
- Structuring proper contracts between the government and its appointed medicine supply agencies where applicable; and
- Ensuring the deployment of reliable financing and accounting systems."
The purchasing and inventory control system must optimize medicine procurement costs, staff requirements and inventory costs. Selection of the most appropriate system will depend upon factors such as:

- The type of procurement system adopted (e.g. annual, periodic throughout the year, when stock reach minimum levels, or a combination);
- The type of medicines used (with reference to cost, shelf-life and consumption rate);
- The geographic situation (isolated areas tend to purchase less frequently);
- Local supply capacity (local capacity allows greater flexibility and more frequent deliveries); and
- Levels of consumption (PIASA, 2011).

Drug Procurement plays an important role in an efficient drug management cycle and is an important procedure for all levels of healthcare institutions. If the drug procurement process is managed effectively it will ensure the availability of the right drugs in the right quantity, available at the right time, for the right patient and at reasonable prices, and at recognisable standards of quality. Drug procurement for forms part of the drug management cycle (Ombaka, 2009: S20).

The North West province of South Africa is divided into four districts (Dr Ruth Segomotsi Mompati, Dr Kenneth Kuanda, Ngaka Modiri Molema and the Bojanala districts) and has a well established district health system and more than 300 clinics and community health centres as well as 22 hospitals. Expenditure on PHC is above the national average (R831 vs R780 per capita in 2012/2013. The North West’s health indicators tend to be average by national standards (Day & Gray., 2013). In late 2011, the Bojanala district experiences a shortage of pharmaceutical and surgical supplies.

The distribution of medicines in the North West follows two processes. The first process involves the manufacturer and the distributor at the provincial depot. The North West provincial depot is situated in Mafikeng (Mmabatho Medical Store). Hospitals then order their stock on an electronic system (RX solutions) from stores as a second step. Hospitals receive stock on a weekly basis from the medicine store and clinics then order stock from a specified list provided by the hospital (manually) and receive their stock biweekly (Patel et al., 2009:550). The North West Department of Health indicate the following factors as causes or contributors to the drug stock-out situation:

- Drug supply management issues;
- Transition from single ARV drugs to the fixed-dose combination (FDC) ARV;
- Distribution challenges;
- Unavailability of stock from suppliers (SSP, 2014).
2.3 PRIMARY HEALTHCARE

The basic architecture of the South African public healthcare industry is as follows:

Figure 2-5: South African Public Healthcare Structure

Source: Liebenberg (2011:3)

In the early 1940s, the Pholela Health Centre model, the forerunner to community-orientated primary care, was one of the earliest demonstration efforts to conceptualize the practice of PHC (Kautzky & Tolman, 2008:18). The constitution of the Republic of South Africa Act (108 of 1996) states that “everyone has the right to have access to healthcare services” (South Africa, 1996b). PHC clinics form the cornerstone for the delivery of health services utilized by the Department of Health (South Africa, 2010). However, despite major improvements over the past 17 years, Motsoaledi (2011:5) points out that some interventions are still needed to establish a standard of acceptable and proper healthcare.

Operation Phakisa was an undertaking by the DOH with the Department of Planning, Monitoring and Evaluation (DPME) in the presidency to address the greatest challenges in the South African Primary Healthcare system, the report has produced some striking statistics. The South African health system includes 3507 PHC facilities across the country. Together these clinics
provide free services to 54 million people. South Africans are using clinics in increasing numbers: primary healthcare visits increased from 67 million in 1998 to 128 million in 2013. However, the PHCs in South Africa face several serious challenges, in particular:

- Patients commonly indicate that they had a negative patient experience: facilities are scored poorly relative to compliance with vital measures of the priority areas in the National Healthcare Facility Baseline Audit 2012.
- Access to services varies across provinces. This is reflected in indicators of accessibility, such as antenatal first visits within the first 12 weeks of pregnancy.
- Patients' total waiting time in clinics ranges from two to seven hours, with, on average, 76% of patients' time in the clinic spent waiting.
- Infrastructure in clinics is often inadequate. About 80% of clinics are not fit for purpose.
- Essential (medical) supplies are often lacking at the clinic level because of a poorly responsive supply chain. For example, requisition for a non-standard stock item (NSSI) may take up to 63 days.
- A lack of strong financial management causes many PHC facilities to run out of funds early in the year.
- The implementation of improvement initiatives is uneven, partly as a result of inadequate institutional arrangements between provinces and national government.

The challenges that the South African health sector faces are well documented and is acknowledged and addressed in the National Development Plan, the Green Paper on National Health Insurance (NHI) and other literature. One of the top priorities is improving the quality of services, which is central to health sector reforms in South Africa. In 2012, the National Department of Health (NDoH) completed a baseline audit of all 3880 public sector facilities in all nine provinces using standardized measurement tools. This included detailed assessments of Primary Healthcare (PHC) facilities and provided the evidence for the changes required to improve the quality of services. In response to the findings, a national co-ordinated approach has emerged to develop a more efficient response to problems in facilities (the "Ideal Clinic" initiative). The primary aim is to systematically improve the quality of services in public sector PHC facilities, but in future this approach could also be used to set standards for public sector contracting of private sector services (Fryatt et al, 2013:34).

The public health sector is responsible for the bulk of Primary Healthcare (PHC) provisions in South Africa, and it is essential to ensure that these services are provided in an equitable, effective and efficient manner (Roberts, 2004:1). Primary Healthcare services are implemented to prevent and intervene leading causes such as mortality, morbidity and disability in South Africa. The PHC concept focuses on the preventative, promotive, curative, rehabilitative
services and core norms and standards will be set to achieve these quality services. The benefit of the PHC package is that it serves as a guideline to how services must be made available at the different levels of healthcare to provide continuous care (Van Rensburg et al., 2004:422).

80 % of Patients across the country is serviced by the public hospital sector in South Africa with limited resources. Complaints about the quality of care are common, relating not only to the actual medical services offered, but also to those factors that have a direct impact on the patient experience of the facility. Such factors include waiting times, staff attitudes, drug shortages, unreliable services, and navigation of the process. Often the problem is principally the shortage of resources, but management of resources is frequently suboptimal (Price, 2013:191).

The NDoH has been developing various strategies to respond to the current deficiencies in the quality of PHC services. The development of Ideal Clinics is at the centre of this effort, these clinics aim to provide a community-based, comprehensive range of integrated diagnostic, curative, preventive, promotive, rehabilitative and palliative services. This forms a hub within the larger PHC team that will ensure continuity of care over time, as well as across services, and if successful, will empower and bring more accountability to the local community (Fryatt et al., 2013:35).

**Figure 2-6: Graphic presentation of the Ideal Clinic**

![Graphic presentation of the Ideal Clinic](source: Fryatt et al., 2013:35)
Medicine selection in the Public Healthcare Sector follows the WHO’s principles. The WHO advocates that procurement should take place against a list of essential medicines. The selection of medicines that are available for procurement in the public healthcare sector in SA takes place through the National Essential Medicine List Committee (NEMPLC) and provincial and facility-based Pharmacy and Therapeutic Committees (PTCs) (Pharasi et al., 2012:180).

Medicine procurement in the public sector has been conducted under the auspices of the Coordinating Committee for the provisioning of Medical Supplies (COMED) since 1988. However, while this structure has been hosted within the National Department of Health, and has coordinated the efforts of the provinces and other participating departments (Correctional Services and Defence), the National Treasury has been responsible for awarding all contracts. Following reports of deterioration in medicine availability across the country, a Ministerial Task Team was established in 2009 to assess the state of medicine procurement.
CHAPTER 3: EMPIRICAL RESEARCH

3.1 INTRODUCTION

The objective of this chapter is to discuss the methodology applied during the research process, the data collection process, the data analysis, and to present and discuss the findings.

3.2 RESEARCH DESIGN

A qualitative approach was applied in the research design as it best serves the objective of this study. Welman, Kruger and Mitchell (2005:193) describe qualitative research as “an essential descriptive design which is used in investigations amongst individuals or groups within a given community, group or organization.” A qualitative research design is appropriate for the study as the researcher wants to comprehend the challenges that the health system experiences in the supply chain and with the procurement of critical medical supplies and the eventual service that is delivered to the end consumer (the patient). The research design is interpretive as the researcher intended to explore the subjective views of the participants to generate interpretative descriptions (Thorne, Reimer-Kirkham & Oflynn-Magee, 2004:2). This research approach enabled the researcher to explore the participants’ point of view as unstructured interview were used to gather information. This qualitative method gave scope for explorative questions and initially presented the participants with open-ended questions.

3.3 PARTICIPANTS

A research population may be described as the group from which the researcher would like to make generalizations and the sample as the group within the population that is selected to participate in the research study. The population included different role players employed in the North West Department of Health involved in the supply chain and the procurement of the Fixed-dose ARVs in the North West province. These role players include the Director of Pharmaceutical Services of the NWWDoH, the District Pharmacist of the Dr. Kenneth Kaunda District, the sub-district pharmacist of the Dr. Kenneth Kaunda District and two nurses working at a Primary Healthcare Centre in the Dr. Kenneth Kaunda District. This enabled the researcher to gain access to the participants’ views on the challenges related to the supply chain of medicine and medical supplies at a provincial, district or sub-district level. Purposeful selection is used mostly in qualitative research where the researcher aims to get in-depth and new important information (Thorne, Reimer-Krikham & Oflynn-Magee, 2004:6). The purposeful selection was guided by the inclusion criteria, which entailed willingness to participate voluntarily, fluency in English or Afrikaans and a working knowledge of the supply chain and procurement processes within the department. The sample size was determined by data saturation, which refers to the
point where no additional new information came from the collection process (Bowling, 2009:410).

### 3.4 MEASURES TO ENSURE TRUSTWORTHINESS

Trustworthiness is characterized by openness, demonstration of methodological congruence, scrupulous adherence to a philosophical perspective, thoroughness in collecting data, consideration of all the data in the analysis process, as well as self-understanding from the researcher (Shopo, 2015:18). The concept of trustworthiness serves as an alternative to reliability and validity in qualitative research (Rule & John, 2011:107).

The trustworthiness of the research refers to the rigour. Rigour can be described as striving for excellence in research through the use of discipline, adherence to detail and strict accuracy (Burns & Grove, 2009:720). Botma et al. (2010:84) state that rigour demands critical examination of each step in the research process. This is important as reducing errors and weaknesses are essential to ensure that the outcomes of the research are an accurate reflection of reality. Guba (cited in Rule & John, 2011:107) proposes four practical concepts to ensure rigour. The first concept, transferability, refers to an alternative for external validity. The second concept, credibility, refers to providing authentic representations of the participants or their perceptions, this is thus an alternative to internal validity. Thirdly, dependability focuses methodological rigour and coherence towards generating findings and case accounts which the research community can accept with confidence. Lastly, conformability is a way of addressing concerns about the effect of the researcher's influences and biases on the research (Guba, cited in Rule & John, 2011:107). The researcher tried to apply these principles to enhance trustworthiness, as seen in Table 3.1 on the next page.
Table 3-1: Strategies to enhance trustworthiness in qualitative research based on Guba and Lincoln (Cited by Botma et al., 2010:233).

<table>
<thead>
<tr>
<th>Criteria for trustworthiness</th>
<th>Strategies to enhance trustworthiness</th>
<th>Strategies to enhance trustworthiness applied to this research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truth value</td>
<td>Credibility measures whether the research provides authentic representations of the participants or their perceptions.</td>
<td>The researcher engaged with participants for at least 30 minutes and probed with follow-up questions for more in-depth explanations during interviews. A voice recorder was used to capture data when the participants were interviewed. The researcher adhered to the ethical criteria of honesty and integrity throughout the study.</td>
</tr>
<tr>
<td>Applicability</td>
<td>Transferability suggests that the same study can be done in a similar context and research setting.</td>
<td>Data collection was done until no more new information emerged. A rich and thick description of research methodology was provided to assist other researchers who might want to conduct similar research studies.</td>
</tr>
<tr>
<td>Consistency</td>
<td>Dependability refers to the audit trail that the researcher provides of the research methodology that was followed.</td>
<td>The research methodology used was described and followed to ensure consistency. The researcher made use of clear and identifiable sources and listed these sources in reference lists. The researcher obtained the assistance of a co-coder who is an experienced senior researcher during the analysis of data with a consensus discussion afterwards.</td>
</tr>
<tr>
<td>Neutrality</td>
<td>Confirmability means that the researcher remained unbiased and objective during the research.</td>
<td>Objectivity was ensured during the data collection process by keeping field notes. Research limitations were noted and the researcher addressed all ethical considerations. The views of the participants were honestly portrayed by having the supervisor verify transcriptions and giving transcriptions to participants to read and verify.</td>
</tr>
<tr>
<td>Authenticity*</td>
<td>Fairness implies that the research results portray fairness or authenticity.</td>
<td>The researcher conducted the research process while observing the principle of fair sampling until the report was disseminated. Interview responses were verified with the participants by allowing them to read transcripts to confirm the results as a true reflection of their views and feelings.</td>
</tr>
</tbody>
</table>
3.5 ETHICAL CONSIDERATIONS

According to the National Department of Health (DoH, 2015:14), the broad ethical principles applicable to health research are “Beneficence and non-maleficence”, this refers to the ethical obligation to maximize benefit and to minimize harm. Distributive justice, there should be a fair balance of risks and benefit amongst all role-players involved in research, including participants, participating communities and the broader South African society. Respect for persons (dignity and autonomy), this principle requires that persons capable of deliberation about their choices must be treated with respect and permitted to exercise self-determination. Further, persons who lack capacity or who have diminished capacity for deliberation about their choices must be protected against harm from irresponsible choices. The key ethical norms and standards applicable to health research are: relevance and value, scientific integrity, role-player engagement, fair selection of participants, fair balance of risks and benefits, informed consent, ongoing respect for participants including privacy and confidentiality and research competence and expertise.

The research has been approved by the Ethics Committee of the North-West University.

3.6 DATA GATHERING

3.6.1 Interviews

Interviews allowed the researcher the opportunity to gather knowledge from participants (Doody & Noonan, 2013:31). The method of data collection was individual, unstructured interviews. The interviews were recorded on tape.

The responses of the interviewees determined the flow and direction of the interviews. A few open questions activated the interview, namely “What are the realities of the value chain and procurement processes for Fixed-dose ARVs in a Primary Healthcare setting in a provincial department of health?”, after which the interviewees were probed on the answers given. Probing was used to gather more information and clarity on the participant's point of view. This, in some instances, resulted in further questions asked apart from the main question and it varied from one interview to another.
Table 3-2: Characteristics of participants involved in interviews

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Interview 1</th>
<th>Interview 2</th>
<th>Interview 3</th>
<th>Interview 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title of participant</strong></td>
<td>District Pharmacist (Dr. Kenneth Kaunda District)</td>
<td>Director Pharmaceutical Services (North West Department of Health)</td>
<td>Sub-district Pharmacist (Dr. Kenneth Kaunda District)</td>
<td>Primary Healthcare Facility Nurses (Dr. Kenneth Kaunda District)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Female</td>
<td>Male</td>
<td>Female (Respondent 1)</td>
<td>Female (Respondent 2)</td>
</tr>
<tr>
<td><strong>Qualifications</strong></td>
<td>B.Pharm</td>
<td>B.Pharm</td>
<td>B.Pharm</td>
<td>B.Cur (Respondent 1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B.Cur (Respondent 2)</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>First language î Afrikaans; second language î English</td>
<td>First language î Tswana, second language î English</td>
<td>First language î Afrikaans; second language î English</td>
<td>First language î Tswana; second language î English</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>First language î Afrikaans; second language î English</td>
</tr>
</tbody>
</table>

3.7 RESEARCH RESULTS

The results of the interviews can be divided into the following themes. Several sub-themes are also included.
### Table 3-3: Main Themes and Sub-Themes of interviews conducted

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-themes</th>
</tr>
</thead>
</table>
| A significantly improved supply chain and procurement system was introduced in the NW Department of Health. | • Various interventions improved the supply chain from national to provincial to district to hospital level  
• Stories of sufficient stock, reserve stock and national stock backups  
• Fixed-dose Combination (FDC) ARVs a priority medicine  
• Distribution-directed, getting more FDC stock to more recipients through direct supply by private service providers, directly to point of use  
• Activated multiple monitoring mechanisms towards proactive management of stock outs  
• Functional public-private partnerships i,a forerunner case for NHI |
| Hierarchal and disconnected, yet functional system                   | • A top-down approach in programmes and associated procurements with top levels disconnected with challenges on facility level  
• There are risks in the supply chain and procurement system beyond the scope of the province, district and sub-district: shortages of unrefined resources, delayed contractual agreements on national level, slow payment of service providers, expiring national contracts without backup reserve stock  
• Inaccurate inventory based on inaccurate DHIS data (campaigns)  
• Interrupted control due to non-integrated inventory systems  
• Functional systems dependent on |
<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>champions to drive the system</td>
<td>- Stock levels are predictive because there are insufficient intelligence to monitor actual use</td>
</tr>
<tr>
<td>Facility specific challenges</td>
<td>- Overburdened primary healthcare clinics are dependent on nurses to dispense medication and this leads to an inefficient skills mix, there is a shortage of pharmacist assistants and pharmacists</td>
</tr>
<tr>
<td></td>
<td>- Insufficient pharmacist support at clinics</td>
</tr>
<tr>
<td></td>
<td>- Cope with generic rural realities such as distance, non-deliveries, strikes</td>
</tr>
<tr>
<td></td>
<td>- Limited access in clinics require smaller stock volume and more frequent delivery, lack of space available to store stock</td>
</tr>
<tr>
<td></td>
<td>- Multi-disciplinary team not always aware of the daily challenges experienced by nurses in the final step of the supply chain</td>
</tr>
<tr>
<td></td>
<td>- Lack of control over patients’ movements between clinics due to insufficient health information systems</td>
</tr>
<tr>
<td></td>
<td>- Stigma remains an important factor to consider in supply chain</td>
</tr>
<tr>
<td></td>
<td>- Immediate needs in clinics to dispense ARVs cannot always be absorbed into inventory system</td>
</tr>
<tr>
<td>The end user as the major consumer in supply chain</td>
<td>- Multiple private distributors assist to get ARVs to patients, but lack a feedback system to report on actual uptake</td>
</tr>
<tr>
<td></td>
<td>- No proof of the actual adherence of the patient in the absence of direct consultative counselling</td>
</tr>
<tr>
<td></td>
<td>- A need to assess the patient as end</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strive to have patient-centered system</td>
<td>• All possible effort is granted to support and accommodate the patient</td>
</tr>
<tr>
<td>within a health system</td>
<td>• Referral systems in place when patient has to move from regimen 1 to regimen 2</td>
</tr>
</tbody>
</table>

### 3.8 DISCUSSION OF RESEARCH RESULTS

It is evident from the research results that a lot of time and effort has been invested in improving the supply of certain essential medicines such as the Fixed-dose ARVs. There are, however, still many constraints, as well as a dysfunctional system where information is not shared between the provincial level and the district level. A new distribution system has also been implemented to deliver the medication directly to the end-user; the patients that qualify for this service should adhere to certain criteria such as a stable CD4 count. The inventory systems of the provincial depot and other health care facilities in the province are also not yet functional and interlinked, also the inventory system is also very reactive and not pro-active, the usage of stock is not accurately determined and the re-ordering level is predicted and not accurately determined.

A big emphasise has been placed on the end-user as the major consumer in the supply chain, systems have been implemented to deliver the stock directly to the end-user, thus eliminating the need for the patient to visit the clinic, as this also entails a lot of travelling for the patient in some instances. The problem with this approach is that there is no way for the clinic sister or pharmacist to measure that patient’s compliance to the drug regimen, thus whether the patient is taking their medication correctly and timeously.

The healthcare system strives to adhere to the *Batho Pele* principle (put people first), a patient-centered system where all possible effort is granted to support and accommodate the patient. By implementing the Central Chronic Medicine Dispensing and Distribution (CCMDD) and Pick Up Points programmes, the process is made as convenient as possible for the patient to collect his / her medication. The implementation of the CCMDD programme has initially focused on the provision of ARVs, and the FDC in particular, to HIV-positive patients who are stable on treatment.
CHAPTER 4: CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

4.1 INTRODUCTION

The objective of this chapter is to provide conclusions with regard to the results obtained in the empirical study of this research. The conclusions correspond to the research objectives. The limitations that have been identified during the course of the study are subsequently discussed. Lastly, recommendations that are applicable to the provincial department of health are made and opportunities for future research are discussed.

4.2 CONCLUSIONS

The general objective of this research was to make recommendations regarding the supply chain and procurement processes of a provincial department of health by exploring the supply chain and procurement processes of the Fixed-dose ARVs. From the questions that were asked during the interview, the following conclusions can be drawn.

From the data gathered during the interviews, it is clear that there has been a massive improvement in the supply of the Fixed-dose ARVs to primary healthcare centres in the entire North West province. Data gathered from the Stop Stock Out Survey in 2015, indicated that the percentages of public healthcare facilities that experienced at least one ARV or TB medicine stock outs in the North West Province decreased with 8% when compared with the previous survey conducted in 2014 (31 % in 2015 vs 39 % in 2014). The Dr. Kenneth Kaunda and Ruth Segomotsi Mompati district have more than halved the percentage of facilities experiencing stock outs from 2014 to 2015. The NDoH also initiated a number of supply chain reforms in 2015, which may have led to an improved availability of key medicines such as the FDC, which is the current regimen for nine out of ten patients on Antiretroviral Therapy (ART) in South Africa (SSP, 2016). The provincial department of health implemented measures to ensure that the stock outs that existed in previous years are prevented. The evidence furthermore suggests that with the new courier type services that was implemented, the element of patient adherence was not well thought out. Although the medication is available for the patient for use, there are no measures to measure patient adherence. Previously the patient had to visit the local primary healthcare centre to receive their medication and it was then easier for the healthcare worker to look at the patient’s medication and determine if the patient has been taking their medication regularly.

There is a hierarchical disconnect between the different levels in the healthcare chain in that the information does not always reach the primary healthcare facility. A problem might be
experienced on a clinic level, but the provincial department of health is not always aware of the problem. There is an improved system or process to deliver the medication to the end-user, but that is where the process stops. There is no follow-up for patient adherence and many months may pass before the patient visits the local clinic again for a follow-up.

4.3 LIMITATIONS

One of the major challenges during this study was the availability of the various role players in the North West Department of Health. It was also a time consuming exercise to obtain permission from the National Department of Health to conduct the research. The research was limited to only five respondents that were involved in the supply of the Fixed-dose ARVs in various primary healthcare centres in the Dr. Kenneth Kaunda district.

4.4 RECOMMENDATIONS

4.4.1 Recommendations for the provincial department of health

During the research it was identified that the supply chain of the fixed dose ARV has improved dramatically, a lot less of the health care centres reported stock outs when compared to the previous years. It is however evident that due to the fact that the distribution of the medicine has been outsourced to a courier pharmacy, much of the patient interaction has been removed that was previously so important to monitor the adherence of the HIV patient.

Also due to the fact that the courier pharmacy is situated in Gauteng, the whole distribution chain is made more complicated, a better alternative might be to implement a courier division at the provincial depot to assist the supply of the drug to the end-user. A more pro-active system must be implemented to monitor the stock levels and act before stock outs of drugs occur.

The current healthcare system is a strong hierarchial system, where different levels exist. It is very much a top down system, the problem that exists is that some information may be lost due to different reporting structures. The primary health care clinic may experience certain problems but the provincial department may not be aware of the problem due to the ineffective reporting structures. The reporting system should be more flexible, so that the provincial department is aware of problems that exist at district level without the facility first reporting it to the district, which in turn reports it to the provincial department.

The risks that exist due to challenges at the National Department of Health should not influence the provincial department of Health. The provincial department should be able to negotiate with the different suppliers before the supply contract or Service level agreements expire, as is the case some contracts expire and the process requires that the National Department of Health
first negotiate the reinstatement of the contract. This may take a lot of time and can lead to possible stock outs of drugs as some suppliers need to do planning to supply the drugs to the provincial depots.

The inventory systems should be integrated, so that the inventory system at the hospital corresponds with the inventory system at the provincial depot. Currently the inventory systems are independent and are not linked to one another. The current usage of drugs should be better monitored to assist in the ordering of the drugs, the current stock ordering system in a lot of the hospitals is a predictive system, an individual predicts when stock needs to be replenished, a daily usage report should be generated and minimum stock levels ascertained and order quantities established.

The inventory system at the local institutions is also very reliant on an individual or champion to drive the system, a contingency plan should be implemented, and training should be provided to all individuals at each facility, to ensure that the inventory levels are maintained at the correct levels.

One of the primary problems that exist at the primary health care facility level, is the lack of human resources and also the overburdened workload of personnel at these facilities. There is a lack of necessary skills to correctly assist the patient with their medicine and related queries. In a lot of the health care facilities, the nurse or nurse assistant is responsible to dispense the medicine to the patient as well as attend to other functions related to their role. Another reality is that the patients do "migrate" between different health care facilities, and it is thus difficult to accurately determine the compliance of the patient, as he/she may never visit the same facility twice.

The end-user is the major consumer in the supply chain and all efforts should be adopted to ensure that the product / service are delivered efficiently and timeously to the consumer. By implementing the CCMDD project and the PuP projects, the service is extended to help the patient with the collection of their medication.

What is also evident from the research is the importance of the role of the healthcare provider in the supply and distribution of medication. As was concluded from previous studies (eg. The Ashevill Project) regarding the role of the pharmacist in patient adherence, the pharmacist can play an important role in the supply and distribution of drugs as they can monitor the patient usage and this will in turn insure that the drug supply chain is as efficient as possible. The pharmacist can also assist in driving down the costs of the supply and distribution of the drug, by ensuring that the patient is taking their medicine correctly, ensuring that the stock levels are maintained and that there is not a over or under supply of the drug.
4.4.2 Recommendations for future research

Further research is needed on the effect of the supply chain of the fixed dose ARV on patient adherence, the effect of the "direct delivery" method to the patient on the patient’s drug adherence and the effect that counselling of the patient on the correct use of the medicine plays in driving down supply chain costs.
BIBLIOGRAPHY


Anon. 2015. North West departments put under administration. Financial Mail: 14 April


FRIDGE.  See Fund for Research into Industrial Development Growth and Equity.


PIASA see The Pharmaceutical Industry Association of South Africa.


SSP. See Stop Stock Outs.


WHO see World Health Organization.


ANNEXURE A: ETHICAL CLEARANCE CERTIFICATES AND INFORMED CONSENT

A1: Ethical clearance certificate from the Ethics Committee of the North-West University

A2: Ethical clearance by the North-West Provincial Department of Health

A3: Participants’ informed consent letter
A1: ETHICAL CLEARANCE CERTIFICATE FROM THE ETHICS COMMITTEE OF THE NORTH-WEST UNIVERSITY

ETHICS APPROVAL CERTIFICATE OF PROJECT

Based on approval by the Ethics Committee of the Faculty of Economic and Management Sciences, the North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) hereby approves your project as indicated below. This implies that the NWU-IRERC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

**Project title:** An investigation into the supply chain and procurement processes of a provincial Department of Health.

**Project Leader:** Dr HM Lotz

**Student:** Mr Johann Kruger

**Ethics number:** NWU-00108-16-A4

**Approval date:** 2016-02-01  **Expiry date:** 2017-02-01  **Category:** N/A

Special conditions of the approval (if any): None

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principle investigator) must report in the prescribed format to the NWU-IRERC:
  - annually (or as otherwise requested) on the progress of the project;
  - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-IRERC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-IRERC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-IRERC retains the right to:
  - request access to any information or data at any time during the course or after completion of the project;
  - withdraw or postpone approval if:
    - any unethical principles or practices of the project are revealed or suspected;
    - it becomes apparent that any relevant information was withheld from the NWU-IRERC or that information has been false or misrepresented;
    - the required annual report and reporting of adverse events was not done timely and accurately;
  - new institutional rules, national legislation or international conventions deem it necessary.

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the IRERC for any further enquiries or requests for assistance.

Yours sincerely

Prof LA Du Plessis

Prof Linda du Plessis

Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)
POLICY, PLANNING, RESEARCH, MONITORING AND EVALUATION

Name of researcher : Mr. J. Kruger
North West University

Physical Address
(Work/ Institution)

Subject : Research Approval Letter- An investigation into the supply chain and procurement process of a Provincial Department of Health.

This letter serves to inform the Researcher that permission to undertake the above mentioned study has been granted by the North West Department of Health. The Researcher is expected to arrange in advance with the chosen facilities, and issue this letter as proof that permission has been granted by the Provincial office.

This letter of permission should be signed and a copy returned to the department. By signing, the Researcher agrees, binds him/herself and undertakes to furnish the Department with an electronic copy of the final research report. Alternatively, the Researcher can also provide the Department with electronic summary highlighting recommendations that will assist the department in its planning to improve some of its services where possible. Through this the Researcher will not only contribute to the academic body of knowledge but also contributes towards the bettering of health care services and thus the overall health of citizens in the North West Province.

Kindest regards

Dr. F.R.M. Reichel
Director: PPRM&E

LEPAFO LA BoITEKANEO
DEPARTMENT OF HEALTH
Kgoloko Post Office Bag X2058
Mafikeng, 2736

NORTH WEST PROVINCE
REPUBLIC OF SOUTH AFRICA

Date 23 MAY 2016
PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR MANAGEMENT TO PARTICIPATE IN UNSTRUCTURED INTERVIEWS

TITLE OF THE RESEARCH PROJECT: An investigation into the supply chain and procurement processes of a provincial Department of Health

REFERENCE NUMBERS: NWU-00108-16-A4

PRINCIPAL INVESTIGATOR: Johann Kruger

ADDRESS: 17 Tsesebe Avenue, Eldoraigne X31, Centurion, Pretoria, 0157

CONTACT NUMBER: 082 219 1176

You are being invited to take part in a research project that forms part of my MBA. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.
This study has been approved by the Institutional Research Ethics Committee of the Faculty of Economic and Management Sciences of the North-West University (NWU-00108-16-A4) and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records.

**What is this research study all about?**

The objectives of this research are:

- To explore and describe the supply chain and procurement processes in a provincial Department of Health.
- To explore and describe the supply chain of fixed-dose antiretrovirals and the challenges that exist in delivering this critical medicine to the patient/end-consumer.

**Why have you been invited to participate?**

You have been invited to participate because you are:

- A Manager responsible for the supply chain or procurements of drugs.
- Comfortable to use English when talking to the researcher.
- Willing to give voluntary, written informed consent and also willing to spend at least one hour with the researcher for an interview that will be recorded on a digital voice recorder.

**What will your responsibilities be?**

You will be responsible to spend approximately 45 minutes to one hour of your time with the researcher in an individual interview. During the interview the researcher will ask you to talk about your experiences of the Supply Chain and the procurement processes currently in use. It will be your responsibility to give your honest feedback to the researcher. It will also be your responsibility to first sign this informed consent, voluntary. Please ask all the questions you wish to ask before onset of the interview. If you consent to participate and you cannot adhere to a scheduled interview, it will be your responsibility to inform the mediator that you will not be able to participate. Please state if you wish to stop with an interview or don’t want to continue with the research as you can withdraw from the research at any time without discrimination.

**Will you benefit from taking part in this research?**

- There are no direct benefits for your participation in this study.
- The indirect benefit will be the scientific significance to improve the understanding of how the supply chain functions and to determine possible shortcomings in order to deliver a service to the South African public. The practical implication of the study is to develop and understand the supply chain of certain critical medicines and to ensure delivery of these medicines to the patients that are in dire need of the medication.
Are there risks involved in your taking part in this research?

There are minimal risks involved in taking part in this research. Your name will under no circumstances be linked back to your work unit. Please note that your name will be replaced with a code and your response will by no means be linked to you. The researcher will give the final research report to the Director of the Supply Chain Unit.

Who will have access to the data?

- Anonymity will be applied as participants will not write their names on the interview schedules or in the transcriptions. Anonymity will be complete because no person other than the researcher will have access to your data and your particulars.
- Confidentiality will be ensured by reporting of findings in an anonymous manner. The researcher will ensure autonomy over the personal information obtained from the participants, meaning the researcher will keep in confidence all personal and other information obtained from the participants.
- The researcher will not allow anybody else to have access to the personal information obtained from the participants. Information will be kept under lock and key, the information will not be linked to the real identities of the participants.
- Only the researchers and the data analysis expert, who will sign a confidentiality agreement, will have access to the data. Data will be kept safe and secure by locking hard copies in locked cupboards in the researcher’s office and electronic data will be password protected. As soon as data has been transcribed it will be deleted from the digital voice recorder. Data will be stored for seven (7) years on a password protected computer in a lockable office on the premises of the North-West University’s Potchefstroom Campus.

What will happen with the data?

This is a once-off collection and data will be analysed in this study only.

Will you be paid to take part in this study and are there any costs involved?

No, you will not be paid to take part in the study. There will thus be no costs involved for you, if you do take part.

Is there anything else that you should know or do?

- You can contact the researcher, Mr. Johann Kruger at 082 2191176 if you have any further queries or encounter any problems.
- You can contact the Institutional Research Ethics Committee at 018 299 4900; EthicsI@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.
How will you know about the findings?

The research findings will be reported back to the Director of the Supply Chain. The researcher will also declare her availability to present the results to the provincial department of health, and if requested, participants will be invited to the presentation.
DECLARATION BY PARTICIPANT

By signing below, I agree to take part in the research titled: An investigation into the supply chain and procurement processes of a provincial department of health

I declare that:

- I have read this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher and all my questions have been adequately answered.
- I understand that taking part in this study is voluntary and I have not been pressurized to take part.
- I may choose to leave the study at any time and will not be penalized or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (place) on (date) 20....

_________________________________________  __________________________________________
Signature of participant                   Signature of witness

DECLARATION BY PERSON OBTAINING CONSENT

I (name) declare that:

- I explained the information in this document to the participant.
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I did/did not use an interpreter.

Signed at (place) on (date) 20....

_________________________________________  __________________________________________
Signature of person obtaining consent       Signature of witness
DECLARATION BY RESEARCHER

I ............................................... declares that:

- The mediator did explain the information in this document to é é é é é é é é é é é .. after I explained the research in detail to the mediator.
- The participant was encouraged to ask questions to the mediator and myself and adequate time was taken to answer him/her.
- The participant understands all aspects of the research as discussed above, adequately.
- I did/did not use an interpreter.

Signed at (place) .......................é ........é é é é .. on (date) é é é é .. 20....

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

Signature of researcher
ANNEXURE B: EXCERPTS FROM UNSTRUCTURED INTERVIEWS

B1: Excerpt of transcript of individual interviews with Director of Pharmaceutical Services (North West Department of Health)

R= researcher, P=participant

<table>
<thead>
<tr>
<th>P:</th>
<th>On the actual sites, on the usage sites neh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R:</td>
<td>OK</td>
</tr>
<tr>
<td>P:</td>
<td>On the procurement site, I must say there hasn’t been those many challenges and mainly because I think there’s much resources that have been made available to make sure that the fixed of those combination is made available, ja.</td>
</tr>
<tr>
<td>R:</td>
<td>OK, so from the procurement site having enough stock and getting those stock out to the user that has been in place now since the fixed-dose combination drugs come in but the challenge lies with the uptake by the user of the user itself.</td>
</tr>
<tr>
<td>P:</td>
<td>Initially yes it was the uptake by the user because you remember the fixed dose was replacing the single dose agent yes.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>So there was a lot of sort of resistance to using a combination or a fixed dose. Where instead of the single agents.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes.</td>
</tr>
<tr>
<td>P:</td>
<td>Was a lot of resistance so it took time for the uptake to happen but eventually it did happen and most of the patients who have on the single agents are now on the fixed dose. Patients, who can tolerate the fixed dose they are directly put on the floor, fixed dose right from the beginning, yes. On the procurements site, I mean the procurement site of the depo because the province is running the procurement in this way. The province procures and puts it in the warehouse and then from the warehouse, that’s where the distribution to the users, to the facilities takes place.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes.</td>
</tr>
<tr>
<td>P:</td>
<td>So from the suppliers to the warehouse, I must say they are no challenges neh.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>R:</td>
<td>Ja.</td>
</tr>
<tr>
<td>P:</td>
<td>Normally the challenges that you get is between your warehouse and your users and that is basically purely because of ground management not because the grounds are not there.</td>
</tr>
<tr>
<td>R:</td>
<td>I hear.</td>
</tr>
<tr>
<td>P:</td>
<td>But your placement of the supplies. People ordering enough quantities neh, they ordering on time so forth and so. So those are the issues in that case.</td>
</tr>
<tr>
<td>R:</td>
<td>OK, yes so what I hear from my side is almost, if you look at a chain. Getting your medicine up to the place where the tenders are completed and the supplies are provided to the province. It almost goes to a point there from good control to less control. The moment that it has to be distributed to all the users, then the adoption becomes extremely complex.</td>
</tr>
<tr>
<td>P:</td>
<td>That ja, that ja where the problem lies. You see ja the fixed doses are mostly used in the district, in the clinics neh.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>Very little of it is used in the hospitals because these patients are seen in the clinics neh. Now in the clinics you donâ€™t have pharmacists</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>There are very few, I canâ€™t think of any if there are very few in the district. We also donâ€™t have your pharmacist assistance neh.</td>
</tr>
<tr>
<td>R:</td>
<td>Ja, ja.</td>
</tr>
<tr>
<td>P:</td>
<td>The worst is, is the nurse that has the responsibility to manage the drugs. In terms of ordering and managing the supplies in the facilities and so forth and so on.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>So that's where now the challenge is at the moment.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Ja, so we tend to see supply chains and procurement actually incorrectly. It's almost as if we don't identify the important role that nurses play and that they are not really trained to do that. Are they?</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>No they are, you see the problem is they are trained but because of their workload in the clinics.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>OK.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>They tend to pay more attention on nursing duties than on non nursing, which is correct of course.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Ja.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>But they pay particular attention on nursing duties more than on non nursing duties because of the shortages that they say they are encountering.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Is this a North West province reality, a South African reality or even a global reality for developing countries?</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>No it's not. It's a reality in mostly on rural provinces.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>OK.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Ja, your urban provinces like Gauteng, Western Cape, KZN. You don't have, yes you maybe you have but it's not to an extend that the rural provinces are experiencing it.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Ja, ja.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Yes.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>But it's also considering the vast amount ARV's I guess that must be distributed.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Yes.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>I mean I can just imagine the space it takes up in a clinic and it must be a daily, active, complex business to get these medicines out.</td>
</tr>
</tbody>
</table>
"P: No it’s true, no it’s true. A fixed-dose combination they take a lot of space neh in your store.

R: Yes, yes.

P: Like for instance at the provincial medical depo neh.

R: Yes.

P: They will be taking so much space to an extend that we’ve decided that the districts or sub districts that are taking a lot of this stock neh.

R: Yes, yes.

P: They are receiving the stock only, we call it direct delivery basis. Meaning that create their order with the medical stores neh.

R: Ja.

P: Stocks place the order with the supplier. Supplier delivers directly now to that facility, it doesn’t come to the depo.

R: OK.

P: So that we reduce the amount of stock that is kept at the depo. So it delivered directly to certain identifying users in the province.

R: OK and Mr., how is this managed? How do you know what the stock levels are at the warehouse? I mean that must be quite a complex system.

P: No the warehouse is using a stock management system.

R: OK.

P: Ja, now that stock management system has a capability to give you all that information. Like if you want your stock balances, you check into the system to show how much you have.

R: Yes, yes."
P: It also shows you how much you have distributed and to whom you have distributed and so that all that information you can get from the system yes.

R: And how far does the scope of this system stretch? Can the system ultimately indicate or how far off in the chain can you monitor the stock?

P: Unfortunately these systems, we call them stand alone systems.

R: Yes, yes.

P: Ja, so the systems at the depo will only give you information at the depo.

R: OK.

P: So, it is not to the facilities or so neh.

R: Yes, yes.

P: Now the depo, supplies the hospitals neh.

R: Yes.

P: Now the hospitals, they also have an inventory management system.

R: OK.

P: OK, each hospital pharmacy has an inventory management system. Which technically give the same information that you can get from the system at the depo.

R: OK.

P: It is only that the systems are not linked.

R: Yes.

P: But you can see maybe here at the province or the depo if the hospital down there has got your stock.

R: Yes.

P: Because they are not linked.
<table>
<thead>
<tr>
<th>R:</th>
<th>Yes, OK ja I can imagine that you can see the whole picture so you can see from province. What the hospitals use, what the clinics or districts or sub districts need and then ultimately you know what's the levels that are in the clinic, in the warehouse.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P:</td>
<td>Ja but currently you can't see what is down there.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>That's one of the problems that maybe affecting also your procurement in the sense that the depo realized on the quantities that has moved out of the depo to predict what will be needed in nature.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>That when they, if they had visibility of what is available at the facilities, to know what is available and would maybe estimate what needs to be brought into top up on what is available across.</td>
</tr>
<tr>
<td>R:</td>
<td>Of course ja, of course. Now have you experienced now with the distribution of stock that there are periods where there are no stock available?</td>
</tr>
<tr>
<td>P:</td>
<td>Not here yet. As I'm saying with a fixed dose, we talking about the fixed dose neh?</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes the fixed dose specifically.</td>
</tr>
<tr>
<td>P:</td>
<td>Fixed dose like I am saying, provisionally from the suppliers we haven't had this problem where suppliers don't have stock.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>Other than that, National Department of Health got the reserve stock.</td>
</tr>
<tr>
<td>R:</td>
<td>OK.</td>
</tr>
<tr>
<td>P:</td>
<td>That they have got through donations from global banks.</td>
</tr>
<tr>
<td>R:</td>
<td>OK, OK, that's interesting.</td>
</tr>
<tr>
<td>P:</td>
<td>Ja, so if they late for some reason there can be a problem with shortage of for some reason. Then we can always request from national to cover up for that period but so far</td>
</tr>
</tbody>
</table>
we haven’t had a situation where supplier doesn’t have stock at all and we don’t have stock of the product, no we haven’t had.

R: OK, what I want to ask is Mr [redacted] is province managed almost like a separate business unit from national?

P: Yes, yes.

R: So do you get your tenders or are tenders given to you from national but you then further your negotiation or...

P: No, national is irresponsible for setting up tenders neh.

R: Yes.

P: So the ARVs, they set up a tent a national agenda for the ARVs in which provinces are participating.

R: Yes.

P: So it’s one tender and all provinces participate in the tender.

R: I understand, OK, OK.

P: Yes.

R: But from there your procurement and distribution of stock?

P: Distribution of national yes.

R: OK, OK and how’s the payment done for the stock?

P: Currently the provinces getting a conditional grant.

R: OK.

P: From national for the HIV and AIDS program.

R: OK, yes.

P: Part of that grant is for the drug because what happens is when the depo procures from
the suppliers; they get an invoice from the suppliers. That invoice is paid here at the province because this grant is centralized at the provincial office. So payment is done at the office now so when the depo supplies the facilities, facilities are not charged because the stock has already been paid for.

<table>
<thead>
<tr>
<th>R:</th>
<th>OK, OK.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P:</td>
<td>It's from the grant.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, OK, I'm with you but that distribution of the stock to the facilities becomes the physical work. That's part of the expenses of the department then.</td>
</tr>
<tr>
<td>P:</td>
<td>Yes, yes there's a distribution part is outsourced. There's a private distribution that distributes from the depo to the facilities yes.</td>
</tr>
<tr>
<td>R:</td>
<td>OK and do you have a service level agreement with that external partner?</td>
</tr>
<tr>
<td>P:</td>
<td>Yes, yes there is this level agreement.</td>
</tr>
<tr>
<td>R:</td>
<td>And is that per province, per district?</td>
</tr>
<tr>
<td>P:</td>
<td>No, it's a provincial one, it's not the district.</td>
</tr>
<tr>
<td>R:</td>
<td>OK.</td>
</tr>
<tr>
<td>P:</td>
<td>Because the depo only distributes up to hospital level.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes.</td>
</tr>
<tr>
<td>P:</td>
<td>From the hospital, the depo mainly supplies the hospital.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes.</td>
</tr>
<tr>
<td>P:</td>
<td>The clinics are supplied by the hospitals.</td>
</tr>
<tr>
<td>R:</td>
<td>OK, ja.</td>
</tr>
<tr>
<td>P:</td>
<td>Now the outsource distribution that I was talking about.</td>
</tr>
<tr>
<td>R:</td>
<td>Yes, yes.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td><strong>R:</strong></td>
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<td>-------</td>
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<tr>
<td>It's an import to the hospitals and that is on contract.</td>
<td>OK.</td>
</tr>
<tr>
<td>From the hospitals to the clinics.</td>
<td>Yes.</td>
</tr>
<tr>
<td>It's got its own sub contract for distribution.</td>
<td>Yes.</td>
</tr>
<tr>
<td>OK, OK, when do you as the provincial director, when in problems in the whole value chain will you get the complaint?</td>
<td>Yes.</td>
</tr>
<tr>
<td>Come again, when?</td>
<td>Ja, you are now the provincial director.</td>
</tr>
<tr>
<td>Yes, yes.</td>
<td>And all this activities happen throughout all the sub districts.</td>
</tr>
<tr>
<td>Yes, yes.</td>
<td>At what time or at what level will you get a complaint? Say for example there's a stock shortage.</td>
</tr>
<tr>
<td>Yes.</td>
<td>How will this be reported, up to where you get the complaint?</td>
</tr>
<tr>
<td>Look, it depends on from where the complaints come.</td>
<td>Ja.</td>
</tr>
<tr>
<td>The complaint originates from the clinic neh.</td>
<td>Yes.</td>
</tr>
</tbody>
</table>
**P:** The level of intervention is the supplying hospital neh.

**R:** Yes.

**P:** Because clinic gets from the hospital.

**R:** OK.

**P:** Now if the stock, the hospital can not assist the next level is the depo. Now if the depo can not assist, it comes now to me the province. Do you understand it? It doesn’t prevent anyone from the clinic to send it directly to me you know.

**R:** Yes, ja.

**P:** Ja, although you have that channel through which this complaints are suppose to coordinate them.

**R:** Yes, yes.

**P:** Rightfully, like for instance if it comes directly from the journey to me, my first point of conducting would be that hospital that is supplying the clinic.

**R:** Yes.

**P:** To check if, what’s happening if let’s say I know there’s a provincial problem, you understand?

**R:** Ja.

**P:** If it’s a provincial problem then, I know that the problem is not at that supplier it’s a provincial problem. But if it’s not a provincial problem then we’ll have to refer it back to the hospital check, what is happening at that hospital.

**R:** OK.

**P:** Yes.

**R:** What I clearly hear is, at what we as academics have read a year ago of stock shortages. Were actually above, it was a challenge that provinces actually inherited. It was not
really something that provinces had control over.

**P:** Ja, you see sometimes there are multiple factors that create this problem you know.

**R:** Yes, yes.

**P:** At some stage last year or the year before last, the problems where as a result of contracts.

**R:** Ja.

**P:** Like I’m saying, contracts are organized at national neh.

**R:** Yes.

**P:** Basically they are managed by national because they organized at national. What happens that we sometimes get is, either contract is ordered late neh.

**R:** Yes.

**P:** For instance, the contract running and that contract expires maybe at the end of September this year neh.

**R:** Yes.

**P:** And then you don’t have a new contract in place up until the very last day of the existing contract

**R:** Ja.

**P:** Even that you get a new contract maybe at the beginning of next month.

**R:** Yes.

**P:** That always creates problems because your new suppliers need time to prepare themselves to start supplying.

**R:** Of course.

**P:** So that in phase out period of the new contract, it always creates a big problem that especially if the new contract is ordered late ja. So like I’m saying, my people, a
number of factors that may create that problem.

<table>
<thead>
<tr>
<th>R:</th>
<th>I can understand yes.</th>
</tr>
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<tbody>
<tr>
<td>P:</td>
<td>The shortages and so forth and so forth.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R:</th>
<th>Ja, ja and how do you, can you be prepared in thesephase in, phase out periods with more stock? Is it possible in your system?</th>
</tr>
</thead>
<tbody>
<tr>
<td>P:</td>
<td>This is what we are trying, like as we talking now.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>R:</th>
<th>Yes.</th>
</tr>
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<tbody>
<tr>
<td>P:</td>
<td>The new contract that came into being assorted by the first of August.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>R:</th>
<th>Yes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P:</td>
<td>Now the old contract expires at the end of July neh.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R:</th>
<th>Yes.</th>
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<tbody>
<tr>
<td>P:</td>
<td>Now because of this phase in phase out problem, what the depo tries to do is to that in reserve stock that maybe cover up the transition phase.</td>
</tr>
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<thead>
<tr>
<th>R:</th>
<th>OK.</th>
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<tbody>
<tr>
<td>P:</td>
<td>But you see now, your reserve stock can only last up to a certain point.</td>
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<thead>
<tr>
<th>R:</th>
<th>Of course.</th>
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<tbody>
<tr>
<td>P:</td>
<td>Ja, so if your new suppliers are able to start supplying within the period where you still have your reserve stock.</td>
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<thead>
<tr>
<th>R:</th>
<th>Yes.</th>
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<tbody>
<tr>
<td>P:</td>
<td>Then obviously you won’t get problems but sometimes it happens that you run out of your reserve stock and your new supplier is not yet ready to supply you. So that how you encounter problems out stock or so.</td>
</tr>
</tbody>
</table>

| R:  | I hear, it's that being independent from an external provider of this medicine you have |
this gaps sometimes. Which you can try to manage the best if your ability it still...

P: It a bit tricky, it difficult.

R: Yes, Mr what I also hear is that within this very complex system of actually getting each patient their medicine. Besides having this at very distinctive levels and every level knows exactly what to do. One of the main challenges is the lack of control of what actually happens with these medicine finally within the clinics.

P: Yes, just to an extend, to a certain extend. Yes that may also be contributing, like I'm saying usually the contributing factor is that in some instances, you don't have that dedicated person who manages...

R: Yes.

P: Your stock.

R: Ja, ja.

P: Depo it not that dedicated. It easier if you have somebody who takes responsibility to manage the stocks

R: Ja.

P: If you have somebody whose attention is divided between roles and responsibilities. Sometimes it becomes a bit difficult.

R: Ja, ja, ja it like you said poor drug management is a reality because of this workload that happens within the clinics. Where health professionals are divided rather between attending the patient.

P: Yes

R: I hear, I hear. Mr, thank you very much.

P: Oh, we done?

R: It done, I really appreciate it. I've asked all my questions.
<table>
<thead>
<tr>
<th><strong>P:</strong></th>
<th>OK.</th>
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<tbody>
<tr>
<td><strong>R:</strong></td>
<td>I spoke earlier with [REDACTED].</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Yes.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>And where I'm sitting you know, the two of you gave very much the same information. Indicating to me there's good communication between you and the districts.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Yes, OK.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Yes.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>I'm glad to hear that then, no problem.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Yes, thank you very much. Kealiboga(spelling).</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>No thank you then OK.</td>
</tr>
<tr>
<td><strong>R:</strong></td>
<td>Thank you, OK, keep well bye bye.</td>
</tr>
<tr>
<td><strong>P:</strong></td>
<td>Bye</td>
</tr>
</tbody>
</table>