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AN ANALYSIS OF SOUTH AFRICAN DISTRICT HEALTH SYSTEM INTERACTION USING AN IMPROVEMENT FRAMEWORK.

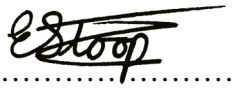
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A dissertation submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, in fulfilment of the requirements for the degree of Master of Science in Engineering.

Johannesburg, 2019

DECLARATION

I declare that this dissertation is my own unaided work. It is being submitted to the Degree of Master of Science in Engineering to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.



……

21st day of November 2019

Abstract

South Africa currently has a knowledge gap for assessing the effect of its district health system. By conducting an assessment of the current state of the district health management structures, this research aims to understand the interactions between the district and the various levels of the South African health system. The work presented is a starting point to understanding key areas of health system management structures in order to address the current knowledge gap in South Africa. Semi-structured interviews and thematic content analysis were chosen as the preferred method for data collection and analysis. The key themes that emerged included the lack of authority provided to the management at district level, the communication gap across all levels and human resources capacity issues within the system. The assessment of the research districts against the research frameworks ties into these three themes. A major observation from the analysis is the differing abilities of districts to address inherent issues due to the constraints faced within and outside the systems. Furthermore, the need to ensure standardisation of the district system is required to mitigate this difference. In conclusion, this research provides a potential starting point for further research into the district health care system and determines that changes in the delegation of authority could have the potential to streamline processes and information transfer within the district system.

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CRQ	Critical Research Question
DHS	District Health System
EC	Eastern Cape
FS	Free State
GP	Gauteng
HIV	Human Immunodeficiency Virus
HOD	Head of Department
HR	Human Resources
HST	Health Systems Trust
IQ	Interview Question
KZN	KwaZulu Natal
L	Limpopo
MDG	Millennium Development Goal
MP	Mpumalanga
MTSF	Medium-Term Strategy Framework
NA	Not Assessed
NC	Northern Cape
NDoH	National Department of Health
NDP	National Development Plan
NGO	Non-governmental Organisation
NHA	National Health Act
NHI	National Health Insurance
NHS	National Health System
NPO	Non-profit Organisation
NW	North West
OHSC	Office of Health Standards Compliance
PHC	Primary Health Care
PMTCT	Prevention of Mother-to-Child Transmission
RP	Research Purpose
SA	South Africa
SDG	Sustainable Development Goal
STI	Sexually Transmitted Infection
TB	Tuberculosis
TQ	Theory Question
WC	Western Cape
WHO	World Health Organisation
NCS	National Core Standards

1. INTRODUCTION

The South African healthcare industry is one that has historically been characterised by the unequal division of resources under the Apartheid era where the focus was placed on the minority population of the country. Since the transition to a democratic society, the South African government has sought to reform the structure of its health system. Attempts have been made to undo the injustices of the past. Today, South Africa has two major sectors in the health care industry, namely the patient-funded private sector and the government-funded public sector. There are still challenges faced with the vast majority (±80 %) of the population being serviced by the public sector which accounts for 48% [1] of total health care spending in the country. The biggest undertaking in post-Apartheid South Africa was the set-up of the District Health System (DHS) which is the governments' mechanism for providing access to primary healthcare to the population.

1.1 Background

This research came into being through a partnership with a Non-Profit Organisation (NPO) that was looking into the structure of health services in some of the districts in which it operates. The problem initially posed an investigation into the system inefficiencies and gaps for management at the district and sub-district levels and service delivery processes as they pertained to Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDs) as the NPO focuses on the care and prevention of those living with HIV and AIDs. However, the researcher has taken a step back and adapted the outlook to incorporate how the structure of the districts is affected by (health) system generated constraints that lead to inefficiencies and management gaps. This research hopes to address the various strategies that have been published by the Department of Health over the years since 2010 to improve the health system.

1.2 Motivation

Health systems are “complex institutions” where individual and work coordinated activities within groups simultaneously occur; this has the potential to create ambiguity in the system

[2]. Within the post-apartheid health system, the most visible achievements are those that are delivered through public health programmes targeting the quadruple burden of disease – HIV/AIDs epidemic, the burden of Tuberculosis (TB), high maternal and child mortality and levels of violence - which South Africa faces. However, these programmes only "focus on remediable problems and may achieve short-term gains" [2, p. 304] which come at a cost to overall health system improvement initiatives. The post-Apartheid health system immediately looked to address the issues of the past and provide equitable health services to the entire population. To address these issues, the National Department of Health (NDoH) wanted to create a "unified but decentralised national health system based on the district health system (DHS) model" [3]. The DHS system has been identified as the primary mechanism for the NDoH to improve access to healthcare through the Primary Health Care (PHC) approach. This research focuses on the structure of the DHS and how the structure that was advocated for in the 1990s has affected the management of health services in the districts of South Africa. These concepts are expanded on in Chapter 2. Therefore, the district management structures currently in place will be investigated, assessing the processes at the disposal of persons in management at a district level.

1.3 Problem Statement

South Africa currently has a knowledge gap for assessing the current state of health systems management and improvement. Therefore, by assessing the current state of district health management structures, one can see how this structure aides or hinders the management process for a district office defined by the National Department of Health. The assessment will be done using a knowledge framework looking to identify system constraints, inefficiencies and knowledge gaps.

1.4 Research Aim

This research aims to understand the current state of management structures in the district health system and assess its impacts on the overall health care system and how the current structures in the health system affect districts.

1.5 Research Rationale

Understanding the current state of these structures in the identified districts has the potential to determine how the districts are managed and thus identify knowledge gaps that may exist in the daily operations within the districts. Using literature and interviews described in Chapters 2 - 4, a knowledge framework will be developed from the literature to grade the current state of the system comparing the fieldwork to the identified improvement characteristics. This grading will allow the knowledge gaps to be identified and for corrective action to be taken for the benefit of the whole system. The knowledge framework assesses each research district based on specific criteria if it has been fully or partially achieved. Therefore, an assessment of the district health management structures and processes would allow for insight into how programmes are affecting the management of daily operations in the districts regarding the resources at the disposal of managers.

1.6 Objectives

1. To investigate best practice frameworks applicable to healthcare management structures and adapt these frameworks for assessing the DHS.
2. To compare selected health districts against the adapted frameworks.
3. To develop a proposed system structure to investigate the gap that exists in the current health system.
4. To provide recommendations that allow the expansion of this research for future studies.

1.7 Research Scope

The focus of this research is at the district level of the national health system with a particular focus on management at this level and the relationship between the district level and other levels of the health system hierarchy. Each province has a different number of districts based on the defined municipal and provincial borders. At the site level, there are three tiers of hospitals defined by different characteristics; these are found in Appendix A. This complexity means narrowing the scope becomes essential for this research. By focusing on the district

offices in two separate districts, this allows the researcher to compare the current state of the DHS in the chosen provinces, and therefore comparisons can be made between the two districts. These districts also serve as the initial foundation for further research.

1.8 Assumptions

It will be assumed that improving the overall health system from a management perspective will improve the overall care within the health system. This improvement amongst management will have a positive effect on smaller health programmes that are implemented within districts such as the various HIV/AIDS prevention and treatment programmes.

1.9 Ethical clearance

Due to the nature of the research, ethical practice is paramount when collecting, analysing and storing the data collected from interviews to ensure that confidentiality of these accounts from the interviewees will be kept at all times. The anonymity of the personal details of the interviewees will also be kept when storing the data collected from the interviews. The data from these interviews will only be studied by the researcher and the supervisors.

It is important to reiterate that there will be no interaction with any patients or any patient records when conducting observations and interviews. All interviews will be conducted in private. Data will be normalised, and no names or identifying characteristics of participants will be published. All participants will be coded. The researcher and the supervisors will keep the list of codes.

The researcher has obtained ethical clearance from the University of the Witwatersrand's Human Research Ethics Committee, medical clearance certificate number *M160483*. The ethics clearance documentation is found in Appendix B.

1.10 Report Layout

Chapter Two comprises the Literature Review, which provides context for the South African healthcare system and approaches used in the health system to deliver services. Chapter Two also looks at leadership and governance themes presented in healthcare and leads into insights from healthcare improvement frameworks. Chapter Two concludes with the development of the research framework based on the presented literature. Chapter Three, Method, is split into two main sections, methodology and method. The methodology section outlines the theory of research designs and methods. The methods section details the choice of research design used in this research and the process that was followed to conduct the research. Chapter Four focuses on the results and analysis of the data collected from the research method and is divided into six sections. These sections include preliminary interview analysis, thematic content analysis, a depiction of health system complexity, observations from interviews, the individual district analysis against the research framework and the relationship between the themes, constraints and inefficiencies. Chapter Five presents the discussion of the findings under two unique banners – Health System Structure and the combination of Identified Constraints and Inefficiencies. Chapter Five closes with a discussion of each research district against the research framework leading into a proposed model for improvement in the health system. Chapter Six concludes the research with the conclusions of the research, limitations of the study and recommendations for future work.

2 LITERATURE REVIEW

2.1 South African Healthcare contextualisation

2.1.1 Development of the South African Health System

The South African Healthcare system is hindered by policies made in the Apartheid era and characterised by policies made in the time following Apartheid into the transition to a democratic society. During the Apartheid period, the healthcare system had been classified by segregation whereby the state took over missionary hospitals to focus on expanding health access for the minority population [4]. The health system became further fragmented with the creation of race-based health departments [4]. During Apartheid the Bantustans homelands created by the ruling party had an estimated doctor to population ratio of 1:15000 compared to 1:1700 in the rest of South Africa as reported by Coovadia et al. (based on the work of Naylor) [4]. These numbers highlight the disproportionate way that each of the healthcare 'systems' was implemented during this era. It is an early example of the lack of resources allocation and underfunding that was experienced within the health system by the majority of South Africans.

After the first democratic election, the new government's plan was built on the principles of primary healthcare [4]. Primary Healthcare (PHC) is a "conceptual model which refers to both processes and beliefs about the ways in which healthcare is structured" [5]. PHC aims to be the first point of contact by which people and communities interact with the health system [6]. The World Health Organization (WHO) believes that the ultimate goal of PHC is to ensure better health for all people [7]. The Department of Health has adopted the PHC approach as the Alma-Ata Declaration of 1978 recognised that primary health care is a key enabler to achieve universal healthcare for any population [8].

To achieve that purpose five key elements of PHC have been identified [7]:

1. Reduce social inequalities in health;
2. Organise health service delivery around population needs and expectations;
3. Integrate health into all public sectors;
4. Collaborative models for policy dialogue and
5. Increase the participation of all stakeholders

These elements of PHC align with the main principle of PHC, which is to deliver efficient and effective health care to all.

One of the significant pieces of health system legislation adopted in democratic South Africa is the National Health Act (NHA), adopted in 2004. The NHA is a policy document regarding the national health system, which incorporates both the private and public health sectors [9]. This Act legislates for the adoption of a district health system to be put in place within South Africa to promote PHC. The NHA is "a framework for the structured uniform health system within the Republic, taking into account the obligations imposed by the constitution and other laws on the national, provincial and local governments concerning health [9, p. 2]. The Act further recognises the socio-economic injustices of the past and will strive to "unite the various elements of the national health system in a common goal to actively promote and improve the national health system in South Africa" [10, p. 11].

The NHA describes the roles and functions that lie within each level of the health system. The National Department of Health (NDoH) is responsible for national health planning and any policies or campaigns that need to be implemented throughout the whole system. Next, are the provincial departments who are responsible for developing provincial policy within the framework of the national policy and public health service survey. Each of the provincial departments is responsible for a defined number of districts within their boundaries. These districts are further divided into sub-districts which are mostly smaller regions where the last level of the health system is found – the clinic and hospital sites. The site level is where health service delivery is performed, but at this level, there are some different types of hospitals. These different sites are highlighted with more detail in Appendix A.

The district health system (DHS) for the country is outlined in Chapter Five of the NHA. With the establishment of the district health system, the health district boundaries are following the already established district and municipal boundaries around the country [9]. Figure 1 below is an overview of the 52 districts in the country and their corresponding socio-economic quintile. However, it must be noted that although these districts have been demarcated, some districts share responsibilities with local government and provincial institutions.

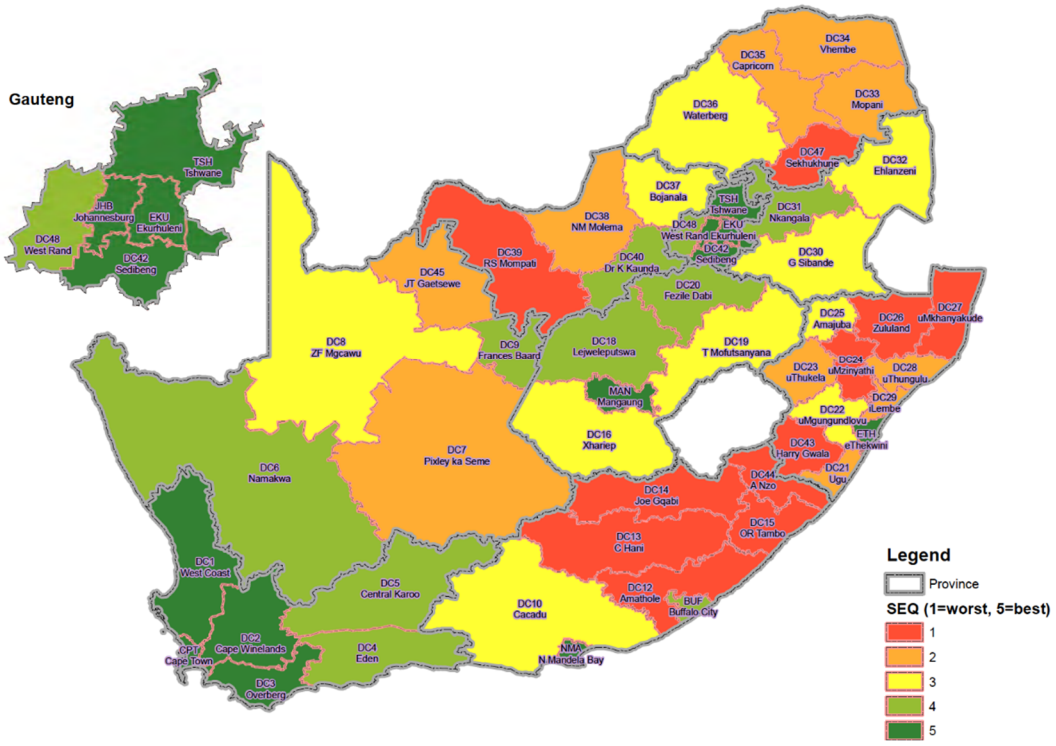


Figure 1: District Map of South Africa [10]

Chapter Five of the NHA also details the establishment of district health councils for each of the 52 districts and outlines the criteria and composition of these health councils [9]. The objective of the health council is to promote cooperative governance and to ensure coordination of activities in the district including planning, budgeting and the provision and monitoring of all health services. What is evident here is the complexity that exists in the health system structure:

- A single national department whose role is to develop policy and coordinate health activities on a national level for the whole population.
- Nine provincial departments each with a provincial health council which attempts to take national policy and tailor these policies for the conditions in their allocated districts including the conditions specific to their respective provinces.
- Fifty-two districts, which are a mixture of district municipalities and metro municipalities, but each district has their respective health council that reports upstream to provincial council. The councils have to take the provincial policy and adapt it to meet the needs of the communities present in the district.

- Each district is comprised of sub-districts or regions, for example, the two districts where research fieldwork took place, District 1 and District 2[1], and have four and seven regions respectively each with various health facilities and capabilities.
- At a Site Level, there is an estimated 4200 public health facilities, 238 private facilities and a number of Non-Governmental Organisations (NGO) who have to ensure all these policies and health services are implemented to care for the population[2] [8].

An overview of South Africa's health system is depicted in the simplified figure in Appendix C.

2.1.2 Human Resources Overview in Healthcare

When looking at human resources in the health system, the shortage of health professionals (doctors, nurses, dentists etc.) affects health systems globally, so this issue is not isolated to South Africa's health system. The World Health Organization stated in 2006 that there is no country which is not facing a significant challenge when it comes to their health workforce [11]. Table 1 illustrates the supply of health professions between 1994 and 2008 versus the population growth [11, p. 384]:

Table 1: Supply of medical professionals (Medical Practitioners, Pharmacists and Nurses) from 1994 to 2008 in South Africa [11]

Year	1994	2000	2008	Increase in numbers	Change in the ratio from 1994-2008
Population size	39 534 575	43 647 260	48 793 021	23%	
Medical practitioners	26 452	29 788	33 534	27%	1: 1496 to 1:1455

[1] District names have been changed due to nature of research.

[2] Based on 2015 data

(including specialists)					
Pharmacists	-	10 506	11 365	13%	1: 3919 to 1: 4293
Nurses (all categories)	158 538	171 645	212 806	34%	1: 249 to 1: 229

Continuing to look at South Africa and the provinces that were involved in this research, a comparison between population size versus number of health professionals across select professions, and how this compares in 2010, is presented in Table 2 [11, p. 412]:

Table 2: Number of medical practitioners and nurses in Gauteng, Mpumalanga and South Africa [3] [11]

Province		Gauteng	Mpumalanga	South Africa
Population Size		11 192 029	3 617 513	49 991 470
% of population		22.3	7.2	100
Medical practitioners	Total	11 524	1 819	31 778
	Percentage	36.2	5.7	100
	Ratio	1:971	1:1 988	1: 1 354
Registered nurses	Total	9 393	3 732	51 966
	Percentage	18	7.1	100
	Ratio	1:1191	1:969	1:962

These numbers show that every registered nurse in Gauteng caters to 1191 people of the population. For Mpumalanga, this number is 969 people per registered nurse. These numbers depict extreme cases, but also serve to highlight the position healthcare is in when it comes to human resources.

[3] Table 1 looks at the total numbers across the system while Table 2 is only referring to the public health sector

2.1.3 Primary Health Care in South Africa

A significant challenge to the health system and the implementation of the District Health System has been the delay in defining geographical boundaries for the district system. Further compounding this is confusion over the responsibilities and structures of the districts in the bigger picture of the national health system [4]. The NHA has given each province the responsibility of managing both the Districts Health System (DHS) and PHC, with this power centralised within the provincial governments. At a national level, the NDoH is responsible for any national health policy that has to be followed within the country. Each provincial department is responsible for developing their respective provincial policy within the framework of national policy and public health service delivery. The structures in certain districts that have local government institutions also generates challenges when it comes to defining roles and responsibilities [12]. Although the NHA defines the roles and responsibilities of each level of the health system, being involved in healthcare and health systems is a complex venture and certain conditions within South Africa add to this complexity – see Section 2.2 Health System Approach.

Since the adoption of the combined approach of PHC and DHS, the system in South Africa has not been without issues. The DHS can be defined as the vehicle for the implementation of PHC. However, the PHC framework has some critical challenges in implementation (as cited by Dookie and Singh based on the work of the WHO) [13]:

1. PHC needs commitments from many factors and sectors – political, financial, human and material requirements.
2. The ideal use of systems' current available resources.
3. The management techniques that need to be used within the PHC framework include how to handle decentralisation, community participation and intersectoral partnership.

These challenges are not isolated to South Africa but are key challenges regarding PHC adoption into any health system.

Closer to home, the South African health system is facing assault from three dimensions – the historical imbalances of the past mentioned earlier, the changing pattern of disease and the

complexity of communicable versus non-communicable disease. The quadruple burden of disease – the HIV/AIDs epidemic, the burden of TB, high maternal and child mortality and interpersonal violence – has had a significant impact on a system that is characterised as "inequitable and inefficient" [13].

Barron et al., as cited by Dookie and Singh [13], have described the process for implementing PHC as "slow and inconsistent" which can be attributed to the historical imbalances as some areas have well-functioning units while others are "fragmented and poorly coordinated PHC delivery systems" [13, p. 67]. Because different areas in the health system are not equal, some scholars (Barron, Dookie and Singh) believe the historical curative health system and ineffective leadership will continue to hamper the health system moving forward.

Combined with these challenges it is important to note that there are differences between *Primary Health Care* and *Primary Care*. This difference is a significant concern as the inconsistency "raises unrealistic expectations in service delivery" [13]. Primary Care is defined as "services provided by general practitioners, nurses or other allied health professionals" [13]. It is regarded as the patient's first contact or point of entry with the health system [13]. Primary care focuses on disease prevention among the population. Primary Health Care, on the other hand, is "a public health strategy derived from the social model of health and is based on the philosophy that health gains are better obtained when people's basic needs are met first" [12, p. 67]. PHC typically focuses at an operational level on the social determinants of communities as the linking strategy between health and healthcare. Because these terms are used interchangeably, a single model for PHC implementation has suffered consequences.

Dookie and Singh believe that PHC is an essential component to transform the health system within South Africa; however, a well-functioning DHS is desirable for PHC success [13]. From this, it is evident that in order for progress to occur the health system needs to be strengthened. This sentiment is further echoed by the World Health Organisation (WHO) who at the 62nd World Health Assembly stated: "the importance to reorganise disease or health problem specific (vertical) actions through comprehensive (horizontal) primary health care" [12, p. 67]. The WHO believes it is necessary to train health professionals to work in a multidisciplinary context, i.e. to be able to adapt from implementing vertical programmes to improving the broader system with horizontal initiatives. Within PHC is it necessary to highlight that certain

characteristics of health care are coordinated at support levels in the system. The district, provincial and national levels of the health system are thus classified as support levels. These supporting structures are necessary for enabling the lower levels of the system [15]. The horizontal versus vertical debate is discussed in detail in section 2.3. Another aspect that requires explanation for context to the South African health system is the Millennium Development Goals (MDG) and Sustainable Development Goals (SDG).

2.1.4 The MDG and SDG

The MDG was a set of goals for improving the lives of people, set out by the United Nations at the Millennium Summit in 2000. The goals are as follows: [15]

1. Eradicate extreme hunger and poverty.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce child mortality.
5. Improve maternal health.
6. Combat HIV/AIDS, malaria and other diseases.
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

The MDG were used as a 'lens' for assessing vital systems in a country. Importantly one can see that of the eight goals, three revolved around health-related issues - numbers Four, Five and Six. MDG Six needs to be further emphasised as the most prevalent challenge hampering the system. Due to the combination of the HIV and TB epidemics affecting many age groups which according to McCoy et al. (as cited by Chopra et [14, p. 1023]) "imposes a massive burden on an already weak and underdeveloped public healthcare delivery system struggling to overcome poor administrative management, low morale, lack of funding and brain drain" [14]. Article Six of the Lancet Series on South Africa suggests that despite increased expenditure on the expansion of health programmes and social grants, there continues to be poor health outputs within the system [14]. "Failure of leadership in tackling the HIV epidemic is a fundamental reason for poor health outcomes" [14, p. 1025], in this statement there is the suggestion that an area of concern in the health system is the attention to HIV/AIDS versus the

strengthening of the whole health system. This forms part of the debate between horizontal or vertical programme focus, elaborated in section 2.3.

However, the MDG had a deadline for the end of 2015 and have officially been replaced by the Sustainable Development Goals, which has an agenda for completion in 2030 coinciding with the National Development Plan for South Africa. Because the MDG had the aim to be achieved by the end of 2015, it is necessary to assess how South Africa performed in the goals with a focus on the health system – goals Four, Five and Six for this research. Statistics South Africa produced a report in 2015 to assess the country's achievements as a whole. Minister TJ Radebe outlined that the MDGs "aligned seamlessly with [South Africa's] own development agenda" [17, p. iii].

MDG Four – to Reduce Child Mortality in South Africa – was addressed by the expansion of coverage of "key child-survival interventions" [17]. The Department aimed to focus on vertical programmes and individual initiatives – for example, Immunisations and Prevention of Mother to Child Transmission (PMTCT). This approach allowed progress to be made but did not result in the two-thirds reductions which was the the goal set out in the MDG [16].

MDG Five was to Improve Maternal Health, which is closely tied to Goal Four with the Prevention of Mother to Child Transmission (PMTCT) initiative. Throughout the MDGs spanning from 2000 – 2015 the Maternal mortality ratio trend firstly increased reaching its peak in 2009, with 311 deaths per 100 000. This ratio declined to 141 deaths in 2013. Again, the focus here by the Department was a push to expand PMTCT services [16].

The last goal concerning Health was MDG Six to Combat HIV/AIDS, Malaria and Other Diseases. MDG Six feeds into the other two goals as South Africa has a high percentage of people living with HIV/AIDs making it necessary for the Department to expand the antiretroviral treatment programme. TB prevalence in the country has meant that the Department has also had to promote and push TB initiatives because TB remains a leading cause of death amongst South Africans. However, when looking at Malaria infection rates South Africa has attained some success as malaria-related mortality decreased by 80% between 2000 and 2013. The country report provides an in-depth analysis of how South Africa faired at

the end of the 15 years set aside for the MDG [16]. The report also addresses what South Africa needs to do in preparation for the Sustainable Development Goals.

Based on the outlined MDG above, the following recommendations have been laid out by Statistics South Africa and the South African Government: [17]

- A "multi-sectoral approach with closer collaboration between NDoH, Water and Sanitation and Local Governments" [17, p. 75] will be needed to scale up and intensify the use of targeted interventions.
- In conjunction with scaling up interventions, there is a need to strengthen the Human Resource capacity and capabilities for delivery of these interventions.
- To better enable the health system, strengthening the monitoring and evaluation systems to assess the outcomes of interventions better.
- Finally, because districts and local communities all have their challenges and a unique set of circumstances, an "equity-focused approach" will need to be developed to suit any districts particular needs for health concerns [16].

Together with recommendations for each MDG, StatsSA has emphasised where South Africa as a whole needs to focus on the transition towards the SDG. The MDG were an enabling instrument for the country as they focused efforts for the development, implementation and measurement of efforts for issues deemed a priority in the modern world [17, p. 149]. Because South Africa had unfinished MDG these will need to be integrated in such a way that they support or enable the SDG moving forward. This integration must focus on the SDG to provide "effective planning, development of appropriate policies and budgets and the construction of appropriate national monitoring and reporting systems." [17, p. 149]. Domestication of the new SDG indicators is necessary for monitoring and reporting planning for South Africa to have accurate and meaningful data collection and evaluation that enables the development of our national agenda.

What these recommendations and plans moving forward highlight is that NDoH places a big focus on the use of vertical programmes or interventions. The horizontal versus vertical debate is discussed in detail in Section 2.3 Horizontal and Vertical Programme Analysis of this Literature Review. Based on these recommendations it is necessary to highlight which of the seventeen SDG will provide a new 'lens' for the research in question. Figure 2 provides an

overview of all the goals; but the focus areas to be explored further are Goals Three, Four, Eight, Nine, Ten and Seventeen. These are the goals that can be directly (3, 10) and indirectly (4, 8, 9, 17) related to health systems.

A noticeable change with the SDG is that the goals have become more system focused when compared to the MDGs. For these new goals, each country would need to integrate and align the SDG indicators into a national framework to outline how the country will collect and analyse data in the different structures of development. This approach is different from the programmatic approach of the MDG and focuses on wholesale improvement of systems instead of individual programmes.



Figure 2: Sustainable Development Goals Mind map [17]

2.2 Health System Approach

In 2012, The Lancet published a review of health in South Africa since the 2009 series [17], highlighting challenges and recommended changes to the health system. The fundamental changes emphasised by the paper about the health system include:

- Leadership, which will be a crucial driver: a need to include the implementation of vertical programmes with effective and component 'project managers' but more importantly looking at competent managers throughout the system who effect change through their initiatives. [18]
- Health system responses – the government, has made it a priority to tackle policy and system challenges to battle the different epidemics in our health system. [18]

Along with these changes, two challenges continue to hamper efforts to improve healthcare and the system. The most prominent problems related to this research topic are [18]:

- Integration and coordination: the vertical programmes implemented to combat HIV and TB need to integrate into the broader health system as they impact upon the system of service delivery. Integration also needs to occur between the different health interventions moving forward.
- Scaling up interventions: there is a need for the system to adopt innovative interventions to the broader system if these interventions have the potential to be scaled to a broader audience.

Since the transition to the new health minister Dr Aaron Motsoaledi in 2009, there have been actions taken demonstrating that government "was leading future plans and [18, p. 2029]. However, it must be stressed that leadership extends beyond those who are responsible for national policy and includes the managers and people responsible throughout the system at a district level who need to lead and tailor policies for their communities all the way to site level. It is at this level where the health workforce interacts with the population. All these groups need to bring about change through their efforts within the system. Managers at a district and site level "should go beyond routine implementation of rules and instructions from their superiors and instead use local information to guide and lead change" [18, p. 2030]. This argues that managers within districts and at the site level are necessary for significant transformation and service delivery within the health system. These managers and leaders are necessary to

drive change as they see what issues are pertaining to their role and could offer insightful advice that could benefit the system.

Since the aim of this research is an assessment of district health management structures and service delivery processes to identify system inefficiency and knowledge gaps, to understand this aim it is necessary to comprehend the current state of management structures in the district health system and assess its impacts on the overall healthcare system. By understanding the current state of these structures in the identified districts, there is potential to determine how the districts are being managed and look for knowledge gaps that may exist in the operations within the districts.

The current state of affairs will be looked at through what is defined by the policy to understand how the system has been set up. To contrast, this understanding, interviews with personnel at the district level and below will seek to understand what the actual structure in place is.

David Harrison [19] authored a discussed document which looked at the accomplishments and shortcomings achieved in the South African healthcare system between 1994 and 2010. The Henry J. Kaiser Foundation commissioned this document. Harrison highlights a number of these accomplishments and shortcomings over this period. The Harrison report provides a comparison between the areas where South Africa has the most and least progress [19], seen in Table 3 on the next page.

Of the points presented in the table, specific strategies tie into the health systems management of healthcare [19]:

- Greater parity in district expenditure.
- Clinic expansion and improvement.
- Hospital revitalisation programme.
- Improved immunisation programme.
- Improved malaria control.

Table 3: Accomplishments and shortcomings in the South African Health system [19]

Ten Effective Strategies
Free Primary Health Care
Essential Drug Programme
The choice on Termination of Pregnancy
Anti-Tobacco Legislation
Community Service for graduating health professionals
Greater parity in district expenditure
Clinic expansion and improvement
Hospital revitalisation programme
Improved immunisation programme
Improved malaria control
Ten Challenge Areas
Prevention and treatment of HIV/AIDS
Prevention of new epidemics
Prevention of alcohol abuse
Distribution of financing and spending
Availability of health personnel in the public sector
Quality of care
Operational Efficiency
Devolution of authority
Health worker morale
Leadership and innovation

One can see that these accomplishments show a strong focus on the mobilisation of PHC in South Africa as the primary mechanism for the populations 'frontline' interaction with the health system. It must be highlighted that the majority of these accomplishments take the form of vertical programmes as opposed to horizontal initiatives. Vertical programmes are disease-specific or target initiatives that look to address a single area of concern over the short term. Contrasted to this, a horizontal initiative seeks to address system-wide problems for long-term improvements. The differences between these are discussed in more detail in Section 2.3.

However, with these accomplishments, the health system has been lagging in 'support functions' for the system. These areas include [19]:

- Poor quality of care in crucial programmes.
- Operational inefficiencies.
- An insufficient delegation of authority.
- Persistently low health worker morale.
- Insufficient leadership and innovation.

A major "challenge for policymakers is to demonstrate rapid improvements in the quality of care and service delivery indicators; while at the same time addressing the intractable health management issues that bedevil efficiency and drive up costs. The establishment of a district-based system was one of the biggest post-1994 innovations making health management more responsive to local conditions and distributing resources more equitably. In retrospect, its success has been hamstrung by the failure to devolve authority fully, and by the erosion of efficiencies through lack of leadership and low staff morale" [19, p. 2].

From this insight by Harrison [19], it is not practical for policymakers to think solely about rapid health programme improvements but also to address macro health system issues. Here a major "battle" occurs between the burden of disease and overall health system improvement that occurs in health systems across the world. These health system improvements need to take the form of analysing how the lower ends of the health system – district and below – could have more authority while operating within the confines of overall health system improvement. Combine this with a need to address human resource challenges and leadership in the system and then macro health system issues can begin to be addressed.

Therefore, a more universal approach to improvement is needed because from the practical strategies it is seen that a number of these focus on specific aspects of the health system. Improved malaria control and immunisation programmes are targeted initiatives seeking to meet objectives pertaining to malaria and immunisation among the population. These two initiatives make it seem that the areas where South Africa has had the most success are isolated silos instead of going to the root cause of issues. Tobacco control, pregnancy termination and revitalising and expanding clinics and hospitals are used to address short-term concerns in any health system. However, have these strategies seek to address the causes that lead to inefficiency and an ineffective health system?

The areas where South Africa is facing challenges can be classified as both systemic and systematic. The systemic challenges revolved around the quality of care, human resource management, system efficiency, authority, financing or spending and leadership in the system; whereas the systematic challenges are the targeted initiatives with the focus on alcohol abuse, new epidemics and the continual challenge of HIV/AIDS in the country. The researcher believes that these challenges are symptoms of the areas where South Africa has had success. With the success of greater parity of district expenditure, the need addressed here is that certain provinces had to have an increase in resource allocation. With a more equitable allocation of public resources, it becomes necessary to monitor the knock-on effect and negate the issues where historically more resourced locations have already drawn more patients and now have to deal with being supplied with fewer resources. Herein lies one of the challenges facing the health system – *Operational Efficiency*. Harrison's view focuses on the way the health system is managed to cite overspending by provinces in consecutive financial periods [19].

From all the health system accomplishments outlined by Harrison in Table 3 [19], the following two pertain most to this research; greater parity in district expenditure and the hospital revitalisation programme. Although these may be effective strategies to have been implemented, the health system has many challenges that need to be urgently addressed. These fall into one of three categories; prevention and control of epidemics, allocation of resources and health systems management. Again, this research is concerned with health systems management, but the allocation of resources plays a part in the systems view of healthcare. Aside from attempting to source resources for the public health system, it is also vital to improve the efficiency of health provision for the public sector. Some inefficiencies are related

to social issues, however some are directly linked to the system – ineffective management is a significant concern in the public health system. The category of prevention and control of epidemics will also need to be noted when looking at health system management because these consume a number of resources from the system – money and people capacity. Thus, when looking at how to improve the overall system, all three categories need to be considered to move the system forward. Harrison [19] believes that a multifaceted strategy as follows is needed to improve efficiency:

1. "Greater separation of political and management responsibilities to enable senior health managers to focus on service management
2. Devolution of clear management responsibilities, linked to accountability for performance;
3. Proper use of management information in decision making - which in turn requires simplification and greater accuracy and efficacy of the health management information system.
4. Better financial management, tracking expenditure and relating it to service performance;
5. Effective planning for and the use of time in meetings;
6. Better use of time of health professionals and the reduction in paperwork and data collection;
7. A commitment to punctuality; and
8. Systematic processes of improving quality of care" [19, p. 29]

To understand this multifaceted strategy better, it is first necessary to discuss the Horizontal approach versus Vertical programmes debate. Understanding this debate is necessary due to both approaches having a place in any health system but offering differing solutions.

2.3 Horizontal and Vertical Programme Analysis

2.3.1 The definition of a Health Programme

A health programme is essentially a targeted effort by the department of health to address specific diseases or initiatives that they deem necessary to be promoted to the entire population of South Africa. Antiretroviral drugs and access to these are an example of a health programme the department is pursuing. This programme is in response to South Africa having a high HIV and AIDS disease burden. These kinds of programmes are in place to address elements of the health system that were not given enough focus under previous government institutions – both the unequal access experienced under Apartheid and the previously under qualified leadership in the national department that the health system experienced in the transition to democracy.

2.3.2 A Comparison between Vertical and Horizontal Programmes

Before Horizontal and Vertical Programmes are discussed in detail, it is vital to define and understand how a health system is structured to see where each programme would fit into the system. As previously stated, health systems are "complex institutions" where individual and work coordinated activities within groups simultaneously occur; this creates ambiguity in the system [2]. Atun et al. defines a health system as "a complex adaptive system embedded within a broad context comprising a set of interacting critical functions" [20, p. 105]:

1. Governance
2. Financing
3. Planning
4. Service delivery
5. Monitoring and evaluation
6. Demand generation [20]

A part of any health system is the health interventions which come with the local conditions of a country; this can be filtered down to the individual districts having their specific conditions defining their current situation. There has been a longstanding debate about which approach is most beneficial to a health system, including the local conditions of specific areas. According to Atun et al. [20, p. 105], this debate has historically been driven by "narrow and binary considerations of integrated and non-integrated programmes".

As this research is looking at the effect of system improvement benefits versus the benefit of health programmes from the perspective of district management, it is necessary to understand what is meant by this statement. Vertical programmes or mass campaigns are "directed, supervised and executed either wholly or to a great extent by a specialised service using dedicated health workers" [21, p. 315], these programmes emphasise specific health interventions. An example of a vertical programme is the HIV/AIDS campaigns that are run in South Africa. Vertical programs tend to have more short-term goals and objectives, along with having a focus on a specific disease - these programs focus on health system operations [21].

A horizontal programme is an approach that can be used to describe multiple health interventions across different regions, and settings [20], another term for this is integrated health services. Oliveira et al. describe the horizontal approach as a "delivery mode of health interventions through the regular infrastructure of health services" [22, p. 68]. Horizontal programs have long-term objectives and goals which rely on regular budgetary resources. In this sense, horizontal initiatives can be seen as centralised activities in the health system.

This debate between these two 'opposing views' has been a part of the health field since an article by Gonzalez et al. which was entitled "Mass campaigns and general health services" [23]. The WHO originally published the article in 1965, but according to Mills, the themes remain widely accepted in the 21st century. Gonzalez, as cited by Mills, states that:

"There are two apparently conflicting approaches to which countries should give careful consideration … The first, generally known as the 'horizontal approach', seeks to tackle the overall health problems on a wide front and on a long-term basis through the creation of a system of permanent institutions commonly known as 'general health services'. The second or 'vertical approach', calls for [the] solution of a given health problem by means of single-purpose machinery." [21]

Although the paper was initially published in the 1960s, the thoughts remain relevant today, especially in South Africa (SA). In SA, we have some vertical programmes that have been 'vocalised' through ever increased coverage and funding [24]. Regarding health, these programmes are disease targeted and the most prevalent in SA are the number of HIV/AIDs and TB initiatives. These diseases remain a part of the Department of Health's key health

indicators - for example, HIV prevalence and TB cases notified are two measures the NDoH uses to determine programme effectiveness. However, these are a part of the strategic vision for the department who commissioned a review of the HIV, TB and PMTCT programmes to assess performance and supply the department with improvement strategies [25]. In conjunction with this, there has been rapid scaling up of the Anti-Retroviral Treatment (ART) programme, increasing the number of people receiving treatment from the government in the public system. Although this is only a portion of the health system, it can be seen that the NDoH does implement many vertical programmes as these allow the department to 'visibly' demonstrate any short-term gains. These gains and the fact that horizontal initiatives rely on regular yearly budgets could be a possible explanation of 'poorer' performance against the vertical initiatives when compared in isolation.

"The energy, resource mobilisation and innovation catalysed by the response to the HIV epidemic must be harnessed to achieve a strengthening of the rest of the health system" [14, p. 1027]. Because of the emphasis placed on the advancement of health programmes, these programmes are absorbing more attention (people capacity and research) and resources at the expense of developing the district health system [24]. There is pressure from the National Department of Health to "rapidly scale up successful programmes that could lead to vertically insulated initiatives and cause distortions across the rest of the health system" [13, p. 1027]. There is evidence [24] that the continual focus on HIV programmes is contributing to a worsening of experience in the health system. This idea has been echoed by McCoy et al. who states that expansion of treatment programmes and plans is hampering health systems in Sub-Saharan Africa because less investment is made towards "strengthening the weak health systems" in these [24, p. 18]. However, there have been positives for the rapid upscaling of specific vertical programs.

Oliveira-Cruz et al. [22] go further into the debate between horizontal and vertical approaches by looking at different levels of any health system. At the "Health services delivery level" the issues related to these approaches include efficiency of service delivery, motivation amongst employees and the available capacity for service delivery should all be considered when looking at the approach to pursue at this level [21]. On the other hand, at the "Health sector policy and strategic management level," [21] the issues include management capacity, timeframes and resource allocation. These problems raised by Oliveira-Cruz et al. [21] all have

different impacts on the associated level in the health system. Looking at the service delivery level, the focus on intervention programmes can consume resources to pursue the objectives of the programme and could potentially lead to the increased pressure on the health services. Examples of this are results-driven programmes which could lead to the "production of fake data" [22]. Compared to the policy level, vertical programmes tend to constrain the interaction between resources and budgets at district levels in a health system.

Looking at these challenges, it is vital that both approaches be developed into an integrated health system as using one approach in isolation does not benefit the overall improvement of a health system. Vertical programmes promise short-term gains amongst disease profiles, but if they are integrated with a horizontal approach in the health system, there is potential for long-term system-wide improvement. Oliveira-Cruz et al. suggest that there is an opportunity to have synergy between both approaches, which could result in coordinated resource planning to allow for both initiatives to be carried out effectively [22]. However, to achieve this leadership at central and operational levels will play a vital role. The WHO argues that the impacts of defining health system objectives and targets for both kinds of initiatives and continuing to monitor both could yield positive results for health systems [22].

Both Atun and Oliveira-Cruz argue for integration between vertical and horizontal programs. Integration refers to the "merger of vertical program objectives and targets within horizontal services" [22]. These services include the critical functions of health systems as defined prior in this section. The conceptual framework defined by Atun et al. [20] on integration can be measured against each of the health system characteristics to get a broad overview of how 'integrated' the system is currently. However, herein lies the complexity of health systems as both types of approaches need to balance many factors for their implementing environment. These include demographics, economics, politics, legislation and regulations, ecology, socio-cultural and technological factors [20].

Figure 3 – taken from Atun et al. [20] – is a conceptual framework which these authors have defined regarding the possibility of integrating vertical programmes into the bigger overall horizontal health system. The simplicity of this framework is that it demonstrates how all health system characteristics are impacted by an Intervention and the System in which a programme is meant to be adopted, is influenced by the definition of the problem that the system is facing.

Ultimately, health systems consist of interacting feedback loops and non-linear relationships. This is evident with most health system decisions as the effect of any value adds or operational consequences will not be immediately visible; the decision and effect are separated in time and space.

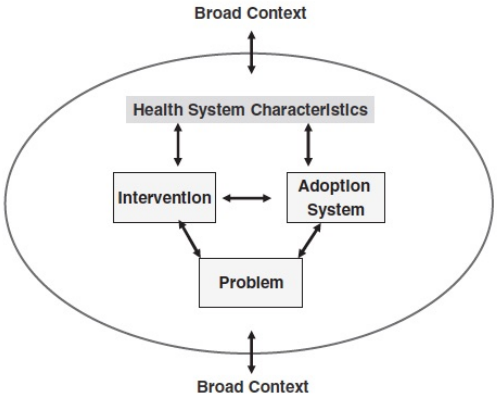


Figure 1 Conceptual framework for analysing integration of targeted health interventions into health systems.

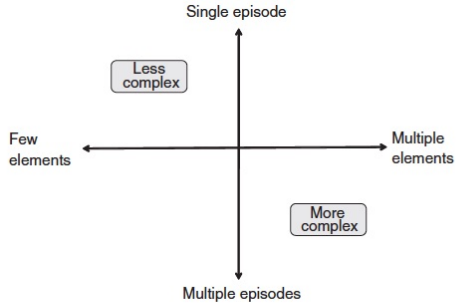


Figure 2 Intervention complexity: episodes of care and number of elements in the Intervention.

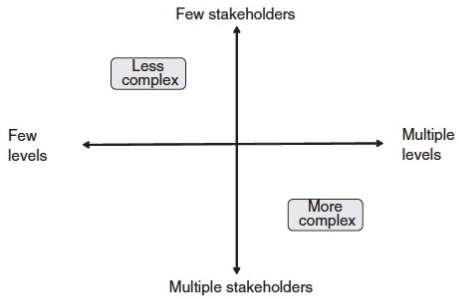


Figure 3 Intervention complexity: levels of care and number of stakeholders involved in delivery of the intervention.

Figure 3: Health system characteristics [19]

Thus, from the various authors – Mills [21] (2005), Gonzalez [23] (1965), Atun [20] (2010) and Oliveria-Cruz [22] (2003) - both the vertical and horizontal approach should be seen as mutually inclusive of one another, arguing that both approaches should be combined and coordinated in some ways as a long-term goal to creating a unified scheme of health services. It can be argued that it is necessary to define the value chain for each approach and how an integrated approach could be utilised. Herein lies the justification of a framework for this research. Assessing the current state of management structures is the first step in offering an answer to health system improvement, looking into management.

2.4 A comparison of South African Health Policy Documents

From the debate presented around which approach or programme type is more favourable for the health system, the researcher thinks that sustainable improvements in any health system require a balancing act of both approaches. However, it must be stressed that the short-term gains received from a vertical program must not replace a long-term vision for overall health system improvements through horizontal initiatives. Looking inward to South Africa, the country has had successes with their disease interventions, but the development of the overall system has not been forthcoming. A reason for this lack of overall system development stems from the various initiatives and plans that the NDoH has produced over the years. These strategic plans usually highlight important challenges facing the health system of South Africa, such as [25]:

- the complex, quadruple burden of disease;
- concerns about the quality of public healthcare;
- an ineffective and inefficient health system and
- spiralling private healthcare costs.

From the examples presented above, the concerns about quality and an ineffective and inefficient health system relate directly to this research. Based on the previous work of Hartmann [27], a comparison table (Table 4), over the page has been adapted to demonstrate how the Medium-Term Strategic Framework, National Development Plan and the Strategic Plans (2010/11-2012/13 and 2014/14-2015/16) compare to the following criteria:

- PHC
- Human Resources (HR)
- Systems and Policy
- Infrastructure
- Monitoring

Table 4: Health Strategic Policy Document Comparison adapted from the work of Hartmann [27]

Outcome	**NDoH strategic plan 2010/11 - 2012/13**	**Strategic Plan 2014/15**	**National Development Plan 2030**	**Medium Term Strategic Framework: 2014 - 2019**
Focus on HIV/AIDS and TB		**X**	**X**	
Disease prevention		**X**		
PHC prioritisation	**X**		**X**	
Decentralisation			**X**	**X**
Implementation of NHI	**X**	**X**	**X**	**X**
Leadership and management improvement	**X**		**X**	**X**
Health Information System	**X**	**X**	**X**	
Facility improvement			**X**	**X**
Increase in institutional capacity		**X**	**X**	**X**
Quality monitoring	**X**	**X**	**X**	**X**
Improved financial management				**X**
Strengthen research and development	**X**			

The table above contrasts the different types of strategic efforts that the NDoH has been pursuing over the years and provides some context as to why the health system needs improvement. The reason behind this is that although the 'plans' look at similar issues, there is little consistency when moving forward from the one plan to the next. However, it must be noted that the strategies want improvements in the overall health system of SA. The Medium-Term Strategic Framework (MTSF) focused on a plan for the country for the years 2014 – 2019 but also including aspects of the National Development Plan (NDP) which is set for completion in 2030. The MTSF provides actions that the Government will take across various levels of national, provincial and local governments. Outcome Two of the MTSF focuses on "A long and healthy life for all South Africans" [25]. This outcome incorporates the following from the NDP [26]:

- "Raised the life expectancy of South Africans to at least 70 years
- Produce a generation of under-20s that is largely free of HIV
- Reduced the burden of disease
- Achieved an infant mortality rate of fewer than 20 deaths per thousand live births
- Achieved a significant shift in equity, efficiency and quality of health service provision
- Achieved universal coverage
- Significantly reduced the social detriments of disease and adverse ecological factors."

These points from the NDP are varied in their focus areas incorporating both vertical and horizontal approaches. The reason behind incorporating both these approaches is "a well-functioning, and effective health system is an important bedrock for the attainment of the health outcomes envisaged in the NDP." The MTSF also provides current constraints, similar to ones which have already been outlined prior:

- "A complex, quadruple burden of diseases
- Serious concerns about the quality of public healthcare
- An ineffective and inefficient health system
- Ineffective operational management at the coalface
- Spiralling private health care costs." [25]

The Medium-Term Strategic Framework defines a strategic direction for the health system – the move to expanded universal access to health care with the NHI model while also expanding institutional capacity. Looking at the Strategic Plans (Plan 1: 2010/11 – 2012/13 and Plan 2: 2014/15 – 2018/19), Plan 1 guided the country into the second year of the implementation of the 10-point plan of the health sector which focuses on improving the health system. Plan 2 seeks to build on the progress that was made under Plan 1 for the electoral period 2014 to 2019 aiming to achieve the National Departments' mission of "[improving] health status through the prevention of illness, disease and the promotion of healthy lifestyles, and to consistently improve the health care delivery system by focusing on access, equity, efficiency, quality and sustainability" [28, p. 3].

Ultimately each strategic document puts a stake in the ground for the current state of the health system across the areas of demographics, non-communicable diseases, legislation updates that have happened and the strategy for the period in question building towards the bigger picture of the National Development Plan of 2030.

2.5 Healthcare Leadership and Management in South Africa

2.5.1 Leadership and Management

Leadership and management within the health system are the two main areas of concern in any system. South African health policy has been identified as being an example of good health policy in the world [4]. However, these policies are accompanied by an ineffective implementation, monitoring and assessment [4]. A significant constraint to service delivery is a lack of management and leadership in different combinations across all levels within the system. Ineffective stewardship and implementation are present across all sectors of the health system in SA which makes it difficult in "developing a unitary vision across a range of different sectors with different cultures and priorities" [4, p. 832]. This ineffective management can extend to either the wrong person being in a position of power or merely the system of processes removing the decision space to a higher more centralised level in the health department.

Early on into the new democratic health system of South Africa, the NDoH appeared to be very proactive when it came to implementing the management of the health districts. The Department had published material for district managers which gives an overview of the job that is required from them as a district manager. However, this would also be dictated by the current policy of the department as well as the local conditions which urgently needed to be addressed. Furthermore, the core functions should not change from district to district. From the 1998 Handbook for District managers, the following chapters were outlined for the manager [29]:

1. "Introduction, purpose and overview of the handbook
2. the district health system: why, what and issues pertaining to its operation
3. governance of the district health system
4. integration of health services
5. sequencing of the development of health districts
6. project management for health district managers
7. financial management for district managers
8. personnel management in district health systems
9. transport management for district managers
10. managing drugs and suppliers
11. district health information systems
12. intersectoral collaboration
13. community participation
14. monitoring and evaluation as tools for change in the district." [29]

This handbook outlined necessary aspects from the time when the District Health System adoption was beginning to take shape. Thus some aspects will not be considered from this handbook itself for this research. However, what the book demonstrates that is still applicable today is it outlines a number of aspects which are still crucial to health district management; these include [29]:

- Governance
- Human Resource Management
- Project management and,

- Integration of health services.

Firstly, *governance* focuses on how managers and leaders will be held accountable for the control they have over the health activities within the district which filters down to the employment of staff and the resources and facilities which are under the district. It is important to note here that because South Africa has three spheres of government – national, provincial and local – there should, therefore, be three levels of governance. For example, health services are a national and provincial function, but the province controls the ambulance services while the local government controls the municipal health services [29]. Because these three levels of governance are a reality in South Africa, it will be necessary to define their objectives in this research, as in Section 2.5.2.

It can be argued that by creating the district health system, the NDoH is in a sense creating a fourth level of governance. The view of this researcher is that the creation of the District Health System was a necessary step in driving the transformation of the health system for the new government, but with the established three spheres of government, another dynamic of complexity was added between local government and district health structures potentially operating in the same sphere.

The Handbook for District Managers, July 1998, proposed three governance models, with an important reason behind being the "difficulty to create a single strategy for the whole country". The strategies outlined include [29]:

Table 5: Health Governance Models

Provincial Option	This option entitles the Province to the responsibility for all district health services.
Statuary District Health Authority Option	The legislation allows the Province to create district health authorities for all the districts in the province.
Local Government Option	A local authority becomes responsible for all the health services in a district.

Each of these strategies has criteria for when the option is to be exercised and put into motion. This Handbook mentions that the ideal governance model would be for the Municipalities to be responsible for the delivery of the health services in the district; however, it may not be possible in every province as some municipalities are not adequately resourced or standardised to deliver integrated services.

The governance and management of health services should be seen as two separate structures. However, the governance structure in place should work with the health manager to address the needs of the community being served. As outlined in the Hospital Strategy Project [29], governance structures would ideally be involved with the following:

- Quality of service.
- The planning of new facilities and service offering.
- Budgeting and finance.
- Grievances from the community.
- Promotion of health in the community

The Handbook for District managers provides further insight in the form of a chapter on the *Integration of Health Services* in South Africa. Integration of health services "is the bringing together of different functions and activities within and between organisations to address common problems". Here is a direct link to Section 2.3.2 as the health system needs to strike a balance between vertical initiatives versus horizontal system development.

2.5.2 Spheres of Government

From Section 2.5.1, it was mentioned that South Africa has a number of levels or spheres of government – National, Provincial and Local – each with different roles, responsibilities and differing levels of accountability. With each of these levels, there are three main aspects at each level [11]:

1. Elected members – who represented the public and approve laws and policies
2. Executive Committee – coordinate the development of policy and oversee the implementation
3. Departments and Civil servants – perform the work of the government

Table 6: Health Structure in South Africa [12]

Level	Number	Outline of roles
National	One	Development of laws and policies which are then approved in the National Assembly and National Council of Provinces Each government department has a minister as the head of the unit Departments are responsible for the implementation of policies or laws developed by cabinet Budgets get allocated to each department by Treasury Department of Cooperative Governance and Traditional Affairs is responsible for the coordination of provinces and municipalities across the country
Provincial	Nine	Provincial Members of the Executive Council (MEC) and Department of Local Government are the responsible parties when it comes to the coordination, monitoring and support of municipalities in the respective province
Local	44 District municipalities 226 Local Municipalities 8 Metropolitan municipalities	Each local municipality has a council who approve policies and any by-laws for the area they govern. The council decide on development plans and where to focus service delivery for their area.

2.5.3 Health Governance

The Health System Trust (HST) presented *Understanding the meaning of Health Governance and the Role of PHC Facility Governance Structures* at a workshop run by their organisation. In this conference presentation, governance was defined as "a collective process of making decisions to ensure continuous vitality and performance of organisations or health systems" [30, p. 16] It is necessary to have an understanding of governance and how it pertains to the health system because it allows strategic objectives to be defined which filter down into the policies and regulations that 'oversee' the entire system. However, governance takes a slightly different promotion in terms of health because the objective of health governance is the promotion of health for the population serviced by the health system while also protecting the population.

The NHA defines the composition and functions of these Governance Structures for each level of the system in the chapters dedicated to the respective level of the health system. Figure 4 is an extract from the HST presentation on Governance which depicts the different structures and responsibilities in the health system at various levels.

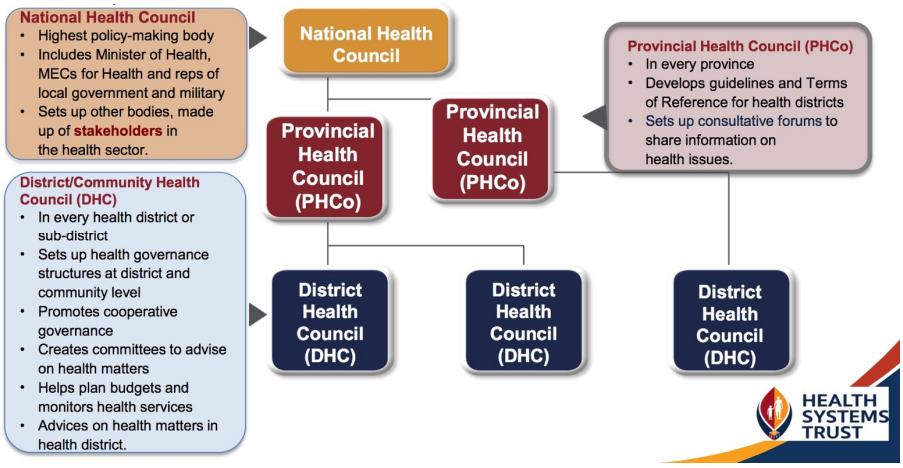


Figure 4: Health system governance structure [30]

2.6 Using frameworks to improve the health system

2.6.1 Benchmarking and Best Practice

Benchmarking is a "continuous process comparing one's business processes and performance metrics to [the] industry's bests and/or best practice from other industries" [31]. The measures which are usually included for benchmarking are cost, quality and time which are all necessary to be measured within the context of healthcare. The improvements which hope to be obtained through benchmarking ensures processes become better, faster and cheaper. There are various methods of benchmarking, namely [31]:

Table 7: Benchmarking methods

Internal	Comparisons are made between internal processes
Competitive	Comparisons between a competitor in the same industry
Functional	Comparison between identical functions across different industries
Generic	Comparison between generic business processes across varying industries

When looking at best practice for healthcare, there is a divide as to best practice in a hospital is different when it comes to best practice for management versus system improvement. Research from the performance changes in hospitals within North Carolina found that improvements in patient wellbeing can be classified as insignificant, throughout the investigation. The cause attributed to this outcome was deemed to be "healthcare leaders not investing in the right operational changes to achieve excellence in safety, affordability and capacity" [32]. The thinking here from a facility perspective is that if enough best practice methods, through outside consultants are implemented to remove the problem, then improvements should start taking place. However, these improvements are often found to be unsustainable once outside help is no longer present in the situation. A driving factor for this is that healthcare delivery is integrated across multiple disciplines creating complexity at the frontline of the system. Spear states that "not only does the number of people making managing care delivery challenges, so do the interferences – what one person does affecting and being affected by what many others do" [31]. This is about what occurs at a facility level but looking at the bigger picture of the system, in relation to the research topic, district level actions affect

what a sub-district can do. Resource diversion is a challenge which demonstrates the system complexity of healthcare and affects the various levels through the health system. What this means for managers and leaders in the system is that safety, quality and improvements should not be thought of as a new diagnostic tool yielding better results. Instead, a new type of leadership is required, which engages broadly with healthcare professionals to lead change in the system.

From the above overview looking into benchmarking and best practice, South Africa has developed a set of standards focusing on quality service in the health sector. These National Core Standards will be briefly explained, looking at what is relevant to the research at hand. Expanding on these standards, the Leadership framework from the National Health Service (NHS) will be explored to highlight critical criteria for leadership in a public health domain.

2.6.2 National Core Standards

The National Department of Health came up with a plan that identified areas for improving the health system. The 10 Point Plan was developed as an attempt to guide health system improvement. The purpose of which was to "serve as a road map towards improving the overall healthcare system and increasing access to health care" [33]. These areas are [33]:

1. Provision of strategic leadership and creation of a social compact for better health outcomes
2. Implementation of a National Health Insurance (NHI) for SA
3. Improving the quality of health services
4. Overhaul the health care system and improve its management
5. Improved HR planning, development and management
6. The revitalisation of physical infrastructure
7. Accelerated implementation of the HIV and AIDS and Sexually Transmitted Infection (STI) national strategic plan and the increased focus on TB and other communicable diseases
8. Mass mobilisation for better health for the population
9. Review Drug policy
10. Strengthening Research and Development (R&D)

These 10 crucial points of the plan were necessary for the provision for the "establishment of a quality and accreditation body" [34] while simultaneously wanting to improve the quality of the health services available to the population. This ties into performance areas for the health system as agreed by the ministry with key stakeholders. The performance area relevant to this research is *improving health system effectiveness* [34]. System effectiveness is the extent to which any system can achieve objectives within their specific environment, made up of availability, capability and dependability. One method of addressing effectiveness is to have a set of standards that everyone in the system utilises and are held accountable against. The accreditation body which is responsible for this effort is the Office of Health Standards Compliance (OHSC), this office is a means "to protect and promote the health and safety of health service users" [34]. The OHSC, in conjunction with the NDoH, developed the National Core Standards through pilot studies and through benchmarking against other accreditation systems [34]. The primary purposes of the National Core Standards are:

- "develop a common definition of quality care which should be found in all health establishments in South Africa, as a guide to the public and to the managers and staff at all levels;
- Establish a benchmark against which health establishments can be assessed, gaps identified, and strengths appraised; and
- Provide for the national certification of compliance of health establishments with mandatory standards." [34]

It must be noted that the main focus for these standards is at the health establishment or facility level where health care delivery takes place in the system. When defining the difference between primary health care and primary care, Section 2.1.1, and defining higher levels of the health system as supporting levels, these structures were accounted for in the NCS. These levels were addressed through assessing if the necessary governance and support functions, including oversight and strategic planning are situated in the correct place.

The NCS was a step forward for the South African health system due to the many different standards and guidelines that were previously available to managers in the system, which made it difficult for supporting levels to measure performance against a set benchmark. The structure of the national core standards is set out with seven intersecting domains which the WHO defined as areas which have high risks when it comes to delivering quality and safe care.

Domains one, two and three address what should be the core competency of any health system for delivering care. These domains are 1. Patient Rights, 2. Patient Safety – Clinical Governance & Clinic Care and 3. Clinic Support Services. The remaining domains service the support functions of the health system and assist in ensuring healthcare delivery. These domains are 4. Public Health, 5. Leadership & Corporate Governance, 6. Operational Management and 7. Facilities and Infrastructure. Each domain is broken down into several sub-domains each which have a specific standard, criteria and way for being measured at the facility level.

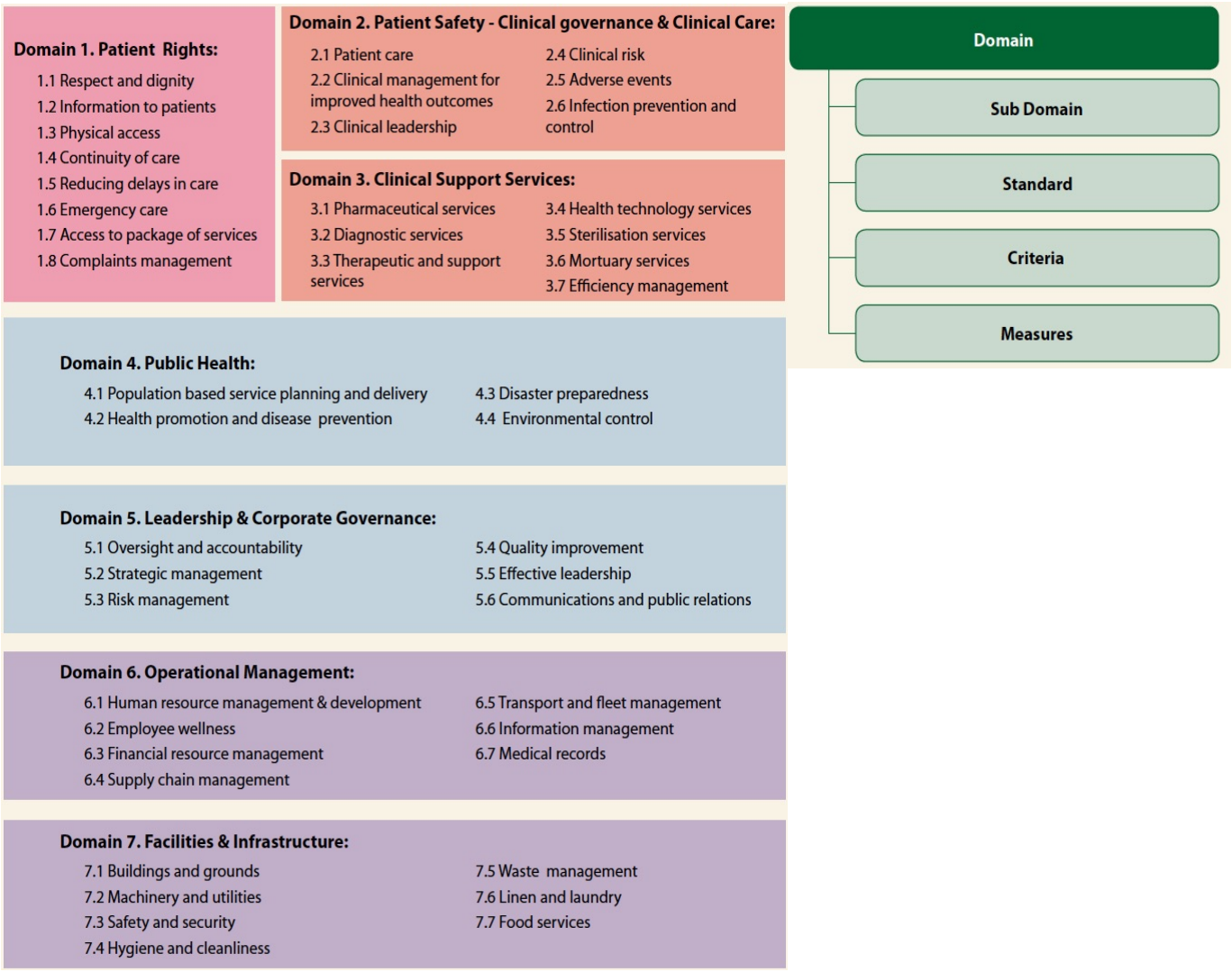


Figure 5: National Core Standard Domains (Left) and Structure (Right) [34]

For the research in question – process improvement in healthcare – the focus is looking at the district level management processes in place, and as such domains, four through seven were looked at in more detail to identify areas which need to be actively 'used' in the higher levels of the system. Domains five and six are the standards which will be further elaborated as the author believes that these are main areas which can assist in determining the performance of the districts in South Africa. These domains have been detailed in Appendix D1 and D2 with their criteria and standards from the policy document.

2.6.3 NHS Leadership framework



Figure 6: NHS Leadership domains [35]

The National Health Services in the United Kingdom have developed a framework for leadership in healthcare that services as the foundation for leadership behaviour within the NHS. This framework has provided a consistent means for leadership development to all staff irrespective to role, seniority or functional area. The purpose of implementing this framework was to have a single overarching leadership framework for all the staff. An overarching framework is needed because of all areas within healthcare that work in conjunction daily to deliver services to the population. The NHS acknowledges that "to transform services, acting on what really matters to the patients and the public is essential and involves the active participation" [35] from all groups including the public in how healthcare delivery gets planned, delivered and even evaluated. The main takeaway here is that leadership is not

restricted to people in senior roles but is necessary to have people inside and outside healthcare to be actively involved in bringing about change that could benefit all. [35]

This framework consists of seven domains, each of which includes four categories. These categories are further split each containing four descriptors. Because this model was put in place as a tool for leadership development in the NHS recognised that people and organisations would be at different stages of maturity and as a consequence, the domains have been split across different stages each depicting a different leadership context. The stages are as follows [35]:

- Stage 1 – personal or own practice/ immediate teams
- Stage 2 – the whole service/ across teams
- Stage 3 – across different services/ the wider organisation
- Stage 4 – the whole organisation/ the healthcare system.

Bearing this in mind domains and leadership context will be defined in relation to this research with the focus being on the management at a district level which falls between stage 3 and 4. The domains that will be explored are *Managing services, Improving services, Setting Direction, Creating the vision and Delivering the strategy* [35]. For the purposes of this research, the domains of *Demonstrating Personal Qualities* and *Working with Others* have been excluded as these domains deal more with an individual's personal qualities and leadership characteristics which was not the focus for this research.

Table 8: NHS Leadership Domain Definitions

Domain	Definition [35]
Managing Services	"Effective leadership requires individuals to focus on the success of the organisation(s) in which they work. This requires them to be effective in planning, managing resources, managing people and managing performance."
Improving Services	"Effective leadership requires individuals to make a real difference to people's health by delivering high-quality services and by developing improvements to services. This requires them to demonstrate effectiveness

	in ensuring patient safety, critically evaluating, encouraging improvement and innovation and facilitating transformation."
Setting Direction	"Effective leadership requires individuals to contribute to the strategy and aspirations of the organisation and act in a manner consistent with its values. This requires them to demonstrate effectiveness in identifying the contexts for change, applying knowledge and evidence, making decisions and evaluating impact."
Creating the Vision	"Those in senior positional leadership roles create a compelling vision for the future and communicate this within and across organisations. This requires them to demonstrate effectiveness in developing the vision for the organisation, influencing the vision of the wider healthcare system, communicating the vision and embodying the vision."
Delivering the strategy	"Those in senior positional leadership roles deliver the strategic vision by developing and agreeing strategic plans that place patient care at the heart of the service and ensuring that these are translated into achievable operational plans. This requires them to demonstrate effectiveness in framing the strategy, developing the strategy and embedding the strategy."

2.6.4 Organisational Planning types

In any organisation, there are certain types or levels of operations that form part of the management and business processes in the hopes of achieving the stated objectives and the organisation's goal [36, p. 5]. Organisations have various planning levels which are strategic, tactical and operational [37]. Strategic planning is where the organisation's leadership defines the direction the organisation wants to pursue while also deciding what resources need to be dedicated to achieving this 'new' strategic direction. As is evident by the personal opinion in this blog, strategic planning answers the questions *what do we do?* And *how do we excel?* [37]. The decisions that are taken here form the foundational basis which will dictate what happens in the long term. To achieve this strategic plan the organisation will need to have at their disposal certain tactics [36] to achieve the business objectives. Tactical planning describes these 'tactics' geared towards emphasizing the current operations across various aspects of any organisation. This is the level where resourcing and budgeting come into effect and address how the organisation will potentially achieve a wider strategy [36, p. 5]. The final level is

referred to as operational planning which is the processes which ultimately link the goals and objectives between tactical and strategic planning. Operational planning answers the questions *where are we now? Where do we want to be?* And *how do we get there?*[37]. Operational planning requires the analysis of how the business' operations and processes interact. [36, p. 4]. This analysis is done on three levels – the arrangement of operations, arrangement of processes and the arrangement of resources [36, p. 4].

When looking into the South African health system and how it applies to these levels, we can see there is an attempt to align a level of planning to a certain level of the health system. From policy documents, the following appears:

Table 9: Planning Type linked to Health System Structure

Planning Level	**South African Health System level**
Strategic	National Department
Tactical	Provincial Department
Operational	District
	Sub-district
	Facility-level

2.6.5 Integrating health system frameworks

The frameworks mentioned above – NCS and NHS leadership – together with the concepts of organisation planning levels and benchmarking will all be used together to assess the districts that have participated in this research in the hopes that it will allow the researcher to understand the current state of the system at a district management level. It is the hope that this current state analysis will help determine the root causes of problems that are faced at a district level and how to address these for future improvements. Using this analysis, a framework tailored to the South African health system will attempt to be developed in order to scale up this research to other districts in the health system.

2.7 Framework Development

From Section 2.6, *Using frameworks to improve the health* system, there are some criteria in place that revolve around individual aspects of this study. The NDoH has developed the National Core Standards, which are in place for the improvement of quality healthcare services at the facility level. The NHS in the United Kingdom proposes the leadership skills that are necessary for individuals to deliver quality healthcare services.

These influences were used to create a framework, which would ultimately show if elements and processes in the current structure of our health system are located at the most effective level. The National Core Standards and National Health System Leadership framework were used together to assess the districts that participated in this research to better understand the current state of the system at a district management level. The NCS forms the requirements for health establishments. However, certain areas need to be highlighted – Domain *4 Public Health, Domain 5 Leadership and Governance, Domain 6 Operational Management and Domain 7 Facilities and Infrastructure* – as they are relevant to the context of this research. The NHS leadership framework demonstrates the skills that are needed within any healthcare system for effective leadership. The following domains – *Managing Services, Improving Services, Setting Direction, Creating the Vision and Delivering the Strategy* – allow an explanation of the impact these have across teams and organisations and as such are relevant across all levels of the health system.

As mentioned previously, the focus of this research was to determine if processes are situated at the right levels in the health system which was attempted using a comparison of the above-mentioned domains.

2.7.1 Final Framework Explanation

Using both the NCS and NHS Leadership Framework, the district level of the health system was assessed using the chosen domains to illustrate which of these criteria are either *fully, partly* or *not achieved* in the current structure. It is important to stress that this assessment has been done from the perspective of the district level with reference to the processes that get pushed down from higher levels. The reasoning behind this is that the district health system

has to tailor health services to the conditions for the communities they serve. It can be argued that the district level is seen as the gatekeeper for the health system as each district has certain conditions to be satisfied, while also implementing the essential services which need to be present in all facilities.

An extract of the blank framework is illustrated below, in Table 10, for both the national core standards and the leadership development framework. Areas that were not assessed in this study, but which are relevant to future research have been marked accordingly. These frameworks have been used to determine an improved placement of processes, which facilitate health system improvement in the form of a Strategic, Tactical and Operational model. Each district was assessed after the interviews had been conducted and subsequently analysed. The method of assessment is qualitatively based on the interviews, which were conducted and for each criterion the district is considered to be in one of three positions – defined as either fully achieved, partly achieved or not achieved.

Table 10: Blank Extract of Research Framework

National Core Standards		**Provincial**			**District**		
		Fully	Partly	Not at all	Fully	Partly	Not at all
Leadership and Governance	Oversight & Accountability						
	Strategic Management						
	Risk Management	*Not assessed but should form part of future work*					
	Quality Improvement	*Not assessed but should form part of future work*					
	Effective leadership						
	Communication & public relations						
Operational Management	HR management & development						
	Employee wellness						
	Financial resource management						
	Supply chain management	*Not assessed but should form part of future work*					
	Transport and fleet management						
	Information management						
	Medical records	*Not assessed but should form part of future work*					
Leadership Framework		Provincial			District		
		Fully	Partly	Not at all	Fully	Partly	Not at all
Managing Services	Planning						
	Managing Resources						
	Managing People						
	Managing Performance						
Improving Services	Ensuring Patient Safety	*Not assessed but should form part of future work*					
	Critically Evaluating Services						
	Encouraging improvement & innovation						
	Facilitating Transformation of Services	*Not assessed but should form part of future work*					

2.8 Conclusion

This chapter has provided insight and context into how the South African healthcare system has been set up since 1994 to combat the inequality that was experienced under the previous Apartheid government. As stated previously, health systems are complex institutions that have to balance the disease profiles of a country and the individual community needs whilst also addressing the type of work which needs to be focused on to attain a healthier population. Within any health system, there is the need to drive overarching programmes which improve the system for the whole population. However, there is also the need to drive 'quick wins' and address matters on a more urgent short term basis. This is where the horizontal and vertical programme debate comes into effect, which adds to the complexity of the health system.

The NDoH has come up with a variety of policy documentation over the years in attempts to improve the system. These strategic documents are overlapping and are different means for the health department to contribute to the overall progress under the National Development Plan for South Africa. It is essential to consider the role that leadership and management plays continually, especially in healthcare. These aspects need to be considered in the scheme of how spheres of government have been legislated in South Africa. To assess the business process an understanding of all the above is necessary for a current state understanding. These concepts are therefore combined with frameworks which have been developed for improvements in quality of care and ensuring that the right leadership characteristics are in place across all levels of healthcare.

To best summarise this chapter this quote from David Harrison which states that "the time and effort taken to unravel and restructure the fragmented health services of apartheid should not be underestimated. But now, the South African public health system stands on the edge of a chasm, which can only be bridged by new resources and decisive leadership" [19, p. 33]. This highlights that the public health system needs to consider leadership and make use of a standard approach for improvements to be made.

3 METHOD

3.1 Introduction

The focus of the research is to investigate and analyse the current health structures in place at the district level and the issues generated which ultimately influences health service delivery. This analysis will determine if aspects such as human resource management, quality management and information flow, are situated at the right level. Through understanding how these aspects are executed within the district health system, a framework to assess the management structures will be developed. Outlined in this chapter are the concepts of method and methodology, which are two sides of the same coin. The method will discuss tools, frameworks and processes that a researcher makes use of in their research. On the other side of this coin, is methodology which is "the study of how research is done" [38], ultimately including the explanation and justification for using the chosen methods throughout the research.

3.2 Methodology

The research methodology section explores the kind of approaches that could be employed in research design – namely quantitative, qualitative and mixed methods approaches. This section further explores the theory, reliability, and validity of research strategies and provides the foundation for the method presented later in the chapter. In any research undertaking, these are three components that researchers should consider [39]. Creswell highlights these in Figure 7. These interlinked components have at their centre a specific research approach. Therefore, this section serves to outline Research Design, Research Methods and Philosophical worldview to gain an understanding of the best approach to this research paper.

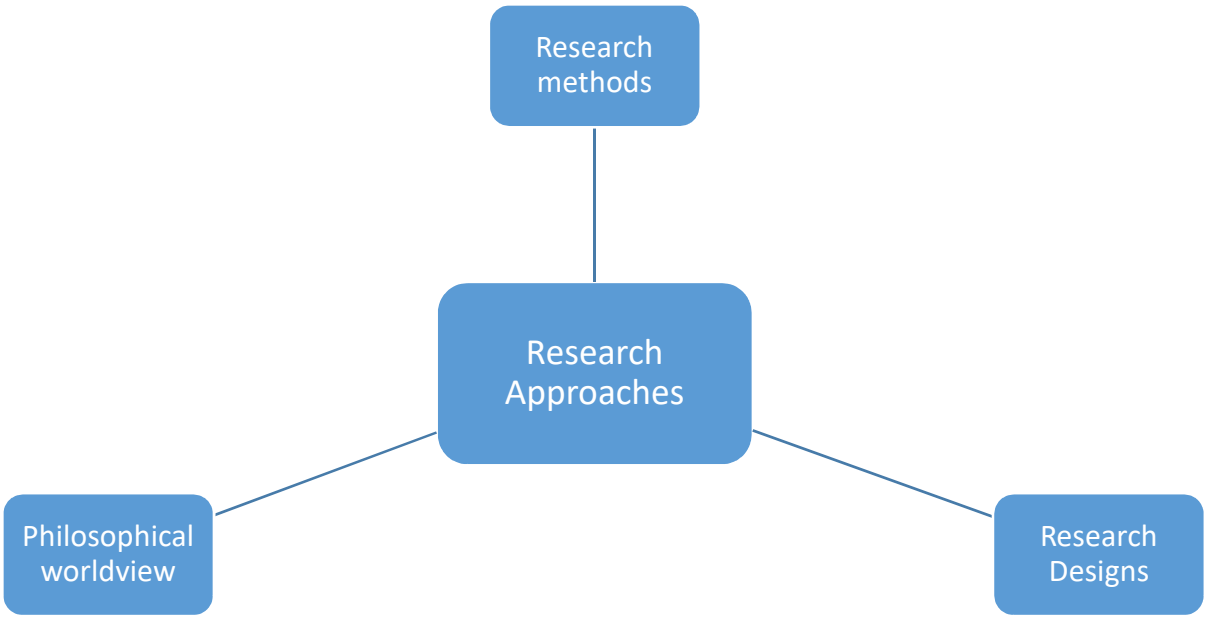


Figure 7: A framework for research [40]

3.2.1 Research Design

From Creswell's book *Research Design* [39], there are three approaches to research which are available to any researcher. Before any research can begin, the researcher needs to understand these different approaches and how they impact the overall research design of any work.

The first approach is *quantitative research, which* is an "approach for testing objective theories by examining the relationship between variables." [40]. This research is commonly associated with the sciences and engineering fraternities, making use of the scientific method focusing on numerical analysis. Creswell states that [40], quantitative research usually has a predefined structure providing a complete process on what theory was used to obtain results and what the researcher can determine from these results and relating it to the theory. Because this approach is usually attributed to the sciences, the focus is on observable events that can be measured. This information can usually be summarised through statistical analysis [41]. Pickard states that to begin quantitative research, a theoretical framework is established from literature and using this framework the researcher can state a hypothesis and variables can be identified [42]. From this hypothesis, the research aims, and objectives need to be defined with an appropriate research method chosen to collect the data. Data analysis is done to determine evidence that either supports or undermines the hypothesis [42].

Quantitative research is thus the measurement of data obtained from certain observable events that are then expressed as numbers and statistics [43]. This type of research design does not apply to the research in question because no numbers were measured during the research period.

Furthermore, we have the *qualitative research* approach which is an "approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" [44]. This research seeks to understand the value of specific behaviours in social systems. This research approach focuses on phenomena in natural settings; hence, this research can create complexities due to the various dimensions of any issues being researched. According to Leedy and Ormrod [41], qualitative research can serve a number of purposes:

Table 11: Qualitative Research Purposes and Definitions

Purpose	Definition [41]
Descriptive	Reveal the nature of relationships between systems, processes and people
Interpretation	Gain insight into certain phenomena or expand current understanding of these phenomena by discovering new problems
Verification	Allows any researcher to test the validity of assumptions made within the research
Evaluation	How a researcher can assess the effectiveness of policies or practices within the field of research.

Yin [45] states that qualitative research has an advantage due to the vivid descriptions that come a real world setting where people are comfortable in their natural setting. Qualitative research does not involve precise measurements of numbers but looks to describe things that occur in the real world with emphasis placed on the human element and the first-hand knowledge in the working setting [46].

Finally, there is the mixed methods research approach which is "inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data and using distinct designs that may involve philosophical assumptions and theoretical frameworks" [39, p. 32]. This approach combines the approaches as mentioned earlier to give a more well-rounded and complete understanding of the research problem through the use of open-ended and close-ended data. The purpose, therefore, is to combine the methods to provide a better understanding of the issue that is being researched.

A researcher's choice of approach also dictates the type of research design. Based on the chosen approach "research designs are types of inquiry" within the approach that is adopted, these designs dictate the procedure or the process of the study/ give a direction in the methods which can be used in the study [39].

Table 12: Types of Research Designs [39]

Quantitative Research	Qualitative Research	Mixed Methods Research
• Experimental or non-experimental designs	• Narrative Research • Case study research • Grounded theory	• Transformative or multiphase research • Exploratory

This research adopts a combination of narrative and case study research designs. Narrative research design systematically gathers a person's experiences as described by them and subsequently analyses this information. This is combined with a case study research which attempts to study a group of people to determine generalisations of the collective group.

3.2.2 Philosophical Worldview

A researcher's worldview has some influence on the research and can assist when choosing the type of research approach. Creswell states that a worldview or paradigm is "a general philosophical orientation about the world and the nature of research that a researcher brings to a study" [39]. The most widely discussed paradigms include post-positivism, constructivism, transformative and pragmatism. The definition, key points and main assumptions of each approach are listed in Table 13.

Table 13: Philosophical Worldview Comparison [39]

Post-positivism	Constructivism
• This worldview follows the process of making claims then adopting or discarding these as the research progresses. • Absolute truth cannot be obtained. • The data and evidence shape any knowledge.	• Humans tend to construct meanings for the world when engaging with this world • There is a need to seek understanding of the context. • The result of gaining meaning is obtained through the interaction with the community.
Transformative	**Pragmatism**
• Importance is placed on the study of experiences of different groups whom "have traditionally been marginalised" [Mertens 2010] • The focus of this research would be on inequalities based on socioeconomic circumstances • Makes use of the program theory of beliefs – how the program would work, and the problems associated with it.	• The focus is to draw from both quantitative and qualitative, thus uses a mixed methods approach • A researcher has the freedom to choose the techniques and methods that best suit the needs of the research

This research makes use of the constructivism worldview because the research aims to gain an understanding of the health system through interacting with key personnel who actively participate in the communities being researched. The research wants to establish context for how to improve the district management system across various districts.

3.2.3 Research Methods

Research methods are forms of investigation within research culminating in data collection, analysis and interpretation. Each of the research designs mentioned in section 3.2.1 has their associated methods. Examples of these can be seen in Table 14.

Table 14: Research Method Comparison [40, p. 45]

Quantitative Methods	Mixed Methods	Qualitative Methods
• Instrument-based questions • Statistical analysis and interpretation • Observational data • Pre-determined	• Open and close-ended questions • Multiple data forms • Statistical and text analysis • Predetermined and emerging	• Open-ended questions • Interview data • Text analysis • Theme or pattern interpretation • Emerging

Because of the nature of this exploratory research, qualitative methods will be used to obtain data and analysed to seek a greater understanding of the current state of the health system management practices.

3.2.3.1 Data Collection

To determine the techniques necessary for data collection a number of arguments have to be considered. Sonnewald [47] states that interviews and surveys combined with observation as a research method are necessary for studies looking to gain information around an area of interest. On the other hand, Wang [48] elaborates that data can be obtained and analysed from interviewing participants and observing them in their natural work setting in a multi-phased approach. Based on the Literature of this study and in light of the previously presented research method theory, the best way to obtain data which attempts to answer the research question would be the use of interviews.

3.2.3.2 Interviews

Tharenou [49] defines the outer limits of interview types as structured and unstructured. Structured interviews follow a set of predefined questions, which are usually close-ended with a certain order. Unstructured interviews thus tend to have open-ended questions and do not necessarily have a set order. In between these two extremes are semi-structured interviews which use specific themes and trigger questions to ‘guide’ the interview while not having a set

number of questions in a predetermined order that need to be answered. Crabtree, as cited by Tharenou [49], states “semi-structured interviews are guided, concentrated, focused and open-ended communication of events that are co-created by both the interviewer and interviewee.”

The open-ended nature of semi-structured questions allow for better contextual data from respondents. These questions are prepared in advance along with cues to probe for more information based on answers from the prepared questions. Wengraf [50] has developed a model for qualitative research which allows the researcher to design and analyse semi-structured interviews by firstly defining the purpose of the research. These interviews will be aimed at healthcare workers at the district level and will not involve patients in any way. The interview is designed to ask questions in order to glean an understanding of the current state of the health care system. The areas which were addressed in the interviews will be elaborated on in the Method section.

The structure for planning semi-structured interviews follows a pyramid type model as developed by Wengraf and can be seen below. The pyramid model developed by Wengraf demonstrates the development of how interview planning should progress. The research purpose (RP) or alternatively the research aim ultimately dictates the research, and from this aim, a central research question (CRQ) or questions are to be established. The RP and CRQ are the backbone for an interview and need to be thought out and planned to have a well-rounded interview design. The next level of this model includes the Theory Questions (TQ), which are developed around the theory that has been used in the research literature review. These ‘themes’ aim to answer the CRQ. From the TQs developed, questions are further distilled into Information Questions (IQs); which make up the interview schedule that is used when interviewing participants. Any interview aims to obtain responses through the IQs which allow the research, to reach conclusions that answer the TQs.

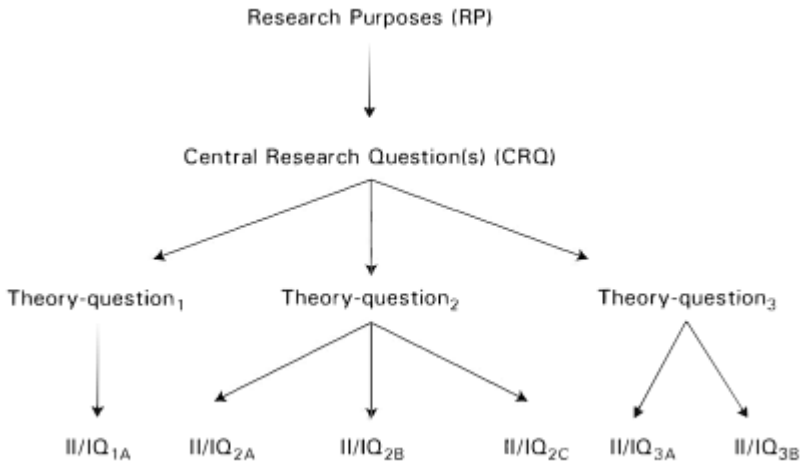


Figure 8: Wengraf's pyramid model [50]

An interview schedule can be seen in Appendix E.

3.2.3.3 Interview Analysis

Thematic content analysis is a qualitative method for "identifying, analysing and reporting patterns within data" [51]. In other words, the analysis looks at the content of all the data and attempts to group this data into categories of certain themes or phrases. The objective of the thematic analysis is to note the number of times certain concepts appear within the data; these concepts can be dictated by the researcher and the research aim. Thematic analysis can simply look at the number of times chosen words or phrases appear, or the data themes can be identified which are either explicitly or implicitly stated [52]. This second form of thematic analysis is called conceptual analysis and is a quantitative research method. The qualitative approach to thematic analysis is termed rational analysis and considers the relationship between words and phrases [52]. This method looks to explore the relationship between the words and phrases which are in the data.

3.2.4 Sampling Procedures

According to Jackson [53], the researcher should select a sample that represents a subset of the research population. Sampling is the process a researcher follows in order to collect information from a smaller set of subjects. For the study in question, convenience sampling has been adopted. This sampling method collects data from the identified research population members who are readily available and can participate in the study. This method for sampling has been chosen due to the study being isolated to a single district, and as a side effect of this, there were only a certain set of HODs and CEOs who could be targeted for research.

3.2.5 Reliability and Validity

Gay and Mills [54] state that if a researcher's interpretation of the collected data is to be considered valuable then "the measuring instrument used to collect the data must be both valid and reliable".

When looking at the reliability of interviews, Wengraf [50] believes that it should be built into the design phase of interview planning. When in the design phase, interview questions should relate to specific theoretical questions. However, to make the connections to the TQ less obvious, it is necessary to separate IQs that relate to the same TQs. If this is done effectively the validity of the interview is strengthened; however, if the participant becomes aware of the relationship between questions, then bias will play a factor in the interview. To address the validity and reliability of interviews triangulation is a strategy that can be used [39]. Creswell suggests that by obtaining perspectives from multiple participants in different settings then it "can be claimed as adding to the validity of the study" [39, p. 251].

The process described above is explained in further detail in Section 3.3.1.2 Interview Focus with an example of how the questions evolved and Section 4.2.1 which attempts to triangulate the data from both districts during preliminary analysis.

3.2.6 Conclusion

The work presented here seeks to investigate and gain an understanding around key areas of our health system management structures and processes. Thus, the use of semi-structured interviews were chosen as the preferred method of data collection, with the intention being to determine how the district health level interacts with other levels in the health system. From the above theory on differing research methods, the method that is defined in Section 3.3, is a qualitative research design making using of semi-structured interviews to understand the current state of the district health system. Because a qualitative approach was used for this research the different purposes of qualitative research were all related to the research topic, this can be seen in Table 15. The preferred method of interview analysis will be thematic content analysis, and this has been detailed in section 3.3.4

Table 15: Qualitative purpose and how it relates to the research topic

Purpose	Relation to this research
Descriptive	The aim is to reveal the nature of management in health districts
Interpretation	How the current structure has culminated in problems within the health system
Verification	To test the claim that problems stem from the nature and structure of management in districts
Evaluation	Compare how management is versus what the policies are in place that dictates management in districts

3.3 Method

When looking into how the study was conducted, it is necessary to understand the aim and scope of the research. This study seeks to gain an understanding of the current state of district health management structures. It is believed that through understanding this current state more knowledge will be gained when looking into how the district health level interacts with other levels of the health system.

The process flow depicting the Method for this study can be seen in Figure 9 over the page. The focus of the research was to investigate and analyse the current health structures in place. The desired outcome was to use best practice frameworks to assess the Management structures at a District Level and provide a proposed system structure for the health system.

This section serves to highlight the actual process followed by the researcher to execute this research.

***Phase One**:* Determine the context for the research and establish the approach best suited to answering the research question through literature review. This phase also consisted of the framework development from best practice literature,

***Phase Two**:* Develop the interview schedule for use in District 1 based on reviewed literature. Collection of data from pilot interviews in District 1.

***Phase Three**:* Interview schedule modified based on the previous data collection from initial interviews.

***Phase Four**:* Data collection from District 1 and 2 based on the refined interview schedule with more focus on the gathering information to assess each district.

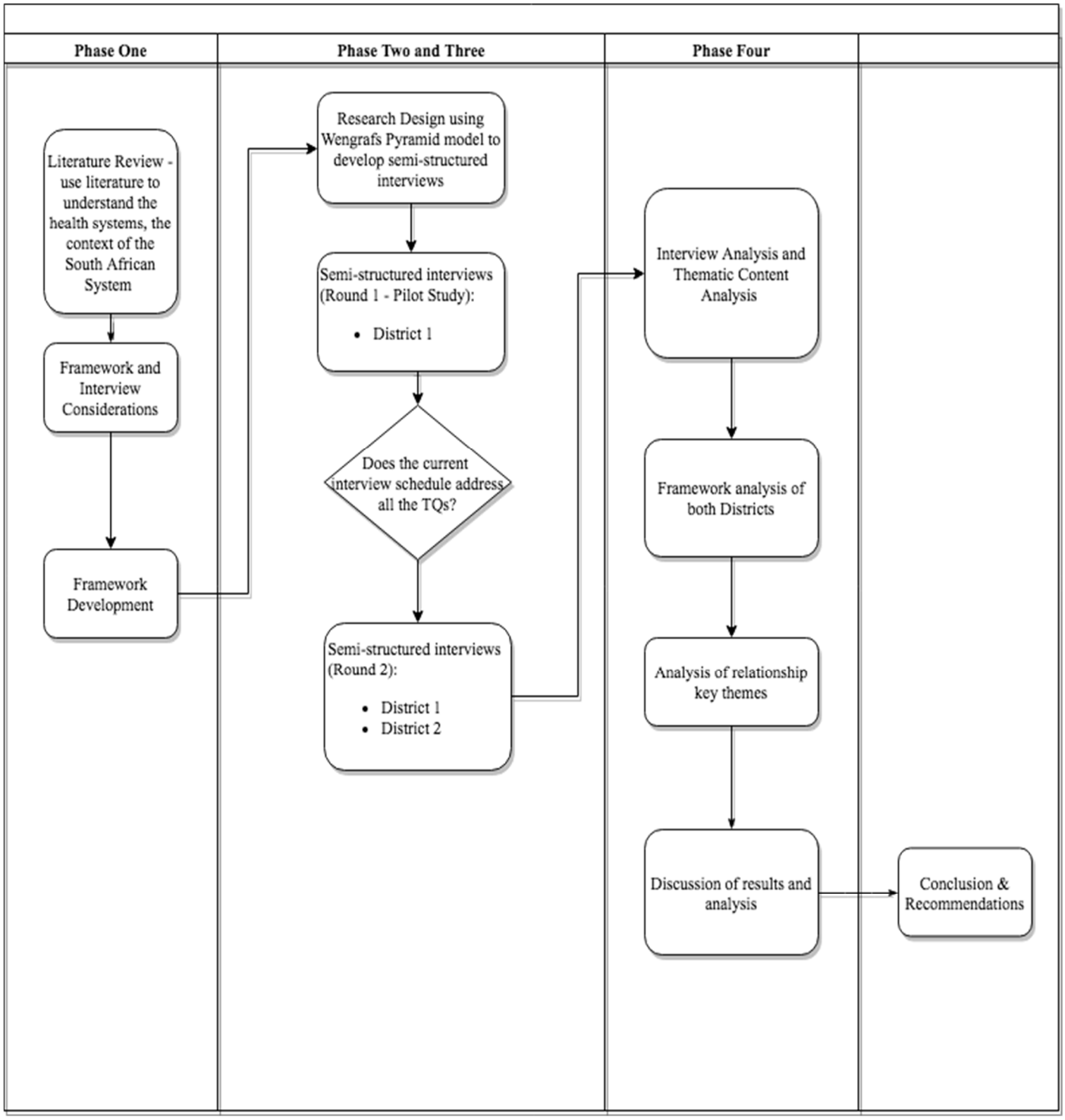


Figure 9: Research method process map

3.3.1 Phase One: Literature Review and Framework Development

To begin the study various literature was used to understand what a health system is, the context of South Africa's health system – including the challenges that had to be addressed due to the historical imbalances under Apartheid - policy documents relevant to the focus area, horizontal and vertical programme analysis and finally leadership and management in health. From this literature, preliminary areas for greater focus were noted and used as the areas for the TQs that were to be used in the interview phase.

3.3.1.1 Study population

The research was carried out in two districts where ethics clearance was granted. The study focused on the management structures within the district health system. There was no patient interaction during the research process. Individuals in positions relevant to the research were interviewed; the interview list detail can be seen in section 3.3.2 Phase Two. Based on the Yin's understanding [45] of qualitative research all interviews were to be carried out in a setting that was familiar to the participants. By using two research districts, in two different provinces allows the research to address some validity concerns because the data has come from two different sources whom did not interact with one another [55].

3.3.1.2 Interview Focus

The open-ended nature of semi-structured questions allows for the collection of better contextual data from respondents by allowing information to flow freely from the source. These questions are prepared in advance along with cues to probe for more information based on answers from the prepared questions. In this way, information may be gathered organically with little interference from the interviewer however there is room left to guide the process as necessary to access information that may prove useful. This is constructive to this research as it allowed the researcher to first gain an unvarnished understanding of the state of the health care programmes in place and then follow through with any potential leading questions to gain insight into possible problems and knowledge gaps.

The areas of focus for the interviews at each level at this moment were identified as:

- Information transfer
- Financials
- Corporate governance
- Quality management
- Human resources management
- Supply chain management

It is important to note that these were initial areas of focus based on the literature. The above areas were assessed as the interview process proceeded. These areas were investigated for how they are imposed down the chain from the National Department of Health all the way to site level as well as how they are reported back up the chain in the health system. This was done to analyse whether the focus area is situated at the right level and to determine how they are executed in the system. Below is a diagrammatic representation of the research framework looking to understand how the above areas flow between the levels.

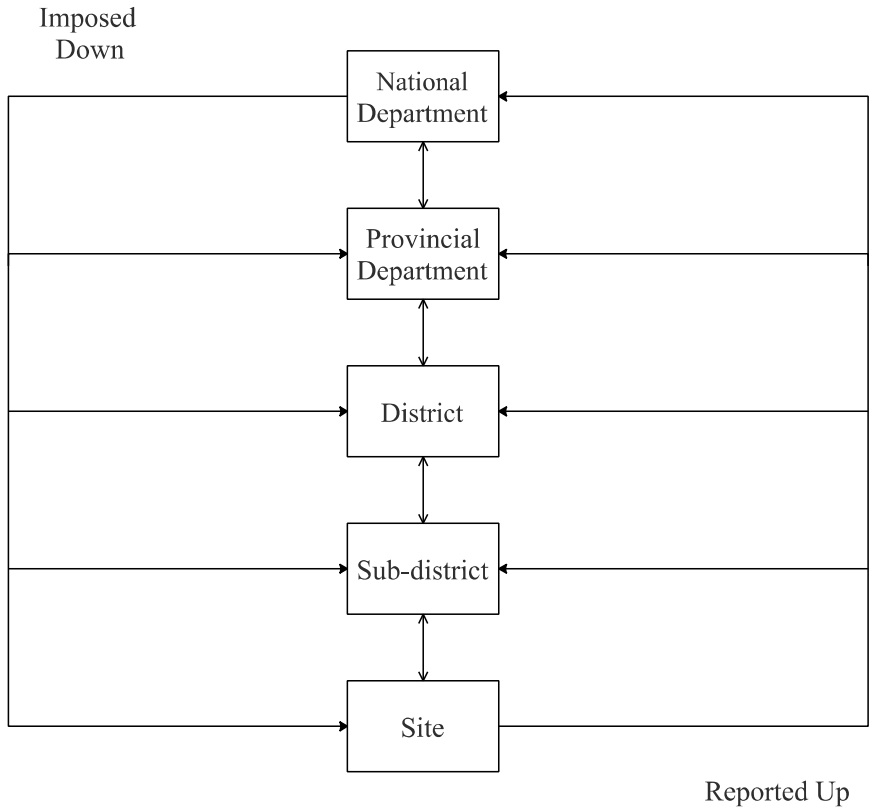


Figure 10: Initial Research framework

The researcher has made every effort to construct a reliable measuring instrument, exploring the nuances of questions that reliably allowed the validity of the respondents' answers to be revealed, without being coloured by the researcher's own unconscious bias. An example of this is evident in the first draft of a question - *"What are the problems in the system and district?"*, which when reviewed, could be considered biased, as the word "problems" implies that the system is inherently flawed. It can be considered to be a leading question, as it is unlikely that someone would respond without focussing on their own problems with the system. The question was examined for bias and rewritten as, *"What is your background and describe your role in the district?"* which was more neutral and allowed for the interviewees' perspectives to be revealed validly, without implied bias in the question. The researcher was very conscious of not 'constructing answers' but rather of allowing the nuances of interviewees' answers to reveal any challenges (or lack thereof) that may have been present in the system. Building reliability into the questions and being aware of (and avoiding) words that could be described as 'eliciting a biased response' was at the forefront of the researcher's mind [54].

The researcher focussed on building the interview tools (questions) of the research to fit this criteria by devising questions such as *"how do you believe your role fits into the whole system?"* which were transferable across structures and circumstances. The same questions could be used in various and varied situations, with interviewees from different stations, levels and institutions being questioned using the same questions. This allowed for cross-referencing of their responses that revealed the state of the system, as it were, at 'the coalface'. Building a clear picture of the system only by using similar comments allowed the research to reveal patterns in the system from the research districts.

In this research the researcher stuck to TQs such as *"what is currently done with regards to the improvement of service delivery?"* to narrow focus on system improvement topics and how district management strives for improving service delivery. Again, this led to less biased and more reliable data. An IQ such as "*What kind of interaction do you have at provincial level"* reveals an aspect of the TQ because in order to improve service delivery it is necessary to understand how the levels of management interact within the system. Linking the IQs to the TQ again allowed the researcher to stick to the ambit of this research, without creating bias.

3.3.1.3 Framework Development

Part of the literature review was researching what kind of frameworks are used for management in healthcare. The frameworks found which best serviced the needs of this research – The National Core Standards from the National Department of Health and the NHS Leadership framework – have been outlined in Section 2.7. Phases one consisted of adapting these frameworks for use in this research study.

3.3.2 Phase Two: Semi-Structured Interview Development and Interview Round 1

3.3.2.1 Interviews

Interviews were conducted over a series of rounds as the research progressed.

- Round 1 focused on District 1 and Academic Sector served as the pilot for the study
- Round 2 focused on follow up for the District 1 and District 2 (Section 3.3.3)

In total semi-structured interviews were conducted with fourteen people, including two hospital CEOs, three academics in health research, seven district directors, a sub-district manager and the district manager of District 1. Some participants were interviewed jointly, and the interviewer posed the same questions and noted individual responses in the interview transcript. Round 1 consisted of six interviews, four of these with directors based in District 1 and looked at gaining insights into the district. The remaining two were discussions with health research professors to better understand the context of the health system in South Africa. For the interviews isolated to District 1, the purpose was to get an understanding of the current state in this district, with questioning focused on the areas mentioned in Section 3.3.1.

3.3.2.2 Data collection

Interviews with the key personnel in District 1 were conducted, using the interview schedule developed from Wengraf's algorithm [50] seen in Section 3.2.3.2. All of these interviews were recorded with permission from the interviewee to participate. These interviews tended to lean more towards the unstructured type of interview with the Theory Questions used to guide the

questioning during the interview to ensure that the topic for this research remained at the forefront. During the interviews, written notes were taken to ensure the correct context of what was said was taken into account when interviews were later transcribed.

3.3.3 Phase Three: Interview Round 2

The second round of interviews were a mixture of follow up interviews with participants from District 1 and new participants in District 2. The interview questions were adapted after the pilot interviews in District 1. District 1 consisted of follow up interviews with questions from the pilot only being asked if clarity was needed, else the adapted questions were asked in the hopes of gaining new insights. The questions posed to participants in District 2 were the same questions that questions that were asked to District 1 participants.

Nonetheless, based on round 1 of the interviews with focus on the previously identified areas, the interview schedule was compared to the TQs and the interview schedule was adapted for round 2 of the interviews. The focus for round 2 changed to lines of communication, the HR process, the authority that the district level has and the effects of vertical and horizontal programmes on the operations of the district. Of note during round 2, the questions from the round 1 were posed to the interviewees in District 2 to provide comparable data. The additional questions for round 2 followed a more unstructured approach compared to round 1 as new insights were sought based on new literature and interviewee's responses to questions.

Due to the time it took to get approval for conducting research in District 2 and looking into more South African healthcare literature it was necessary to conduct follow up interviews in District 1. This was done to get clarity on new questions which the researcher felt were necessary for the study. District 1 was the only district to have follow-up interviews because these questions were included in the interviews that were conducted in District 2.

3.3.4 Phase Four: Data Analysis and Framework Analysis

The interviews were listened to on a number of occasions for the purpose of analysis but all recordings, names of interviewees and their positions are kept confidential throughout the research. From the listening of recordings, it was decided that for further analysis, the

interviews were transcribed to extract the common themes. As stated by Gill et al. [57] based on the work of Pontin [58] by transcribing the recorded interviews this provides a record of what was said in the interview and thus protects against bias.

The analysis looked for the common and reoccurring themes present in the interviews. From the transcribed interviews, data was collected into the following areas for comparison:

- The structure defined by legislation (on paper) based on policy documents
- How the structure has been implemented
- The constraints of the person's role and the broader system – what can and cannot be done at the level
- Inefficiencies of the structure
- Extra important information
- Tools for improvement
- Horizontal versus Vertical programmes

For each interview, the themes were tabulated to compare ideas across different district interviews. An example of the table used during analysis can be found in Appendix F with snapshots provided in the results section. If there was any occurrence that related to the above comparison areas these were directly quoted into the analysis table. From this content analysis and the framework considerations within the Literature Review, the research framework was finalised. This research framework was used to assess the districts who participated in the research and the results compared between the two. The themes chosen for interview analysis were identified from the interview responses. These differed from the focus topics from which the interview questions were developed.

To resolve the potential issue of comparability between the different interview schedules, the preliminary analysis would focus on grouping the common questions asked across the interviews and tabulated the responses. This has been elaborated on in Chapter 4.2.1 Preliminary Analysis. From the preliminary analysis a number of key themes emerged when comparing the interview responses. These themes were put into a relationship diagram in an attempt to understand how the themes were interconnected.

Once interview analysis was completed, the researcher noted the important observations that came about from both of the districts. These observations have been grouped around areas which were revealed in the interview analysis, namely:

- The structure of the health system – both national and district.
- The human resource process that was communicated in the interviews.
- The flow of information upwards and downwards in the health system.

By comparing the common interview questions and the responses received the aforementioned observations were able to outline and filled in using multiple sources of information which demonstrates a form of triangulation in the study.

4 FINDINGS AND ANALYSIS

4.1 Introduction

Once all the interviews had been transcribed, preliminary analysis comparing the interviews against the common questions was carried out. From this analysis a number of key themes stood out and these were grouped when performing the thematic content analysis. The categories which the analysis was group form the basis of the discussion in chapter five are focused on the health system structure based on legislation and how this structure has been implemented as well as the constraints and inefficiencies, which are experienced at a district level.

This chapter has been laid out in the following manner:

- The chapter opens with preliminary interview analysis with key notes from two interviews across the common questions.
- From the themes that came out of the preliminary interviews a relationship diagram is provided to look at the interdependecies of the themes.
- Following this relationship diagram, thematic content analysis was performed using a number of categories to organise the important notes from each of the interviewees.
- The next analysis that was done, was a depcition of the complexity of the health system using all the notes from the previous analysis.
- The next section explores observations from literature and interviews, this section is split between the structure of the health system, the human resources process and how information and communication occur in the research districts.
- The penultimate section is the results of the frameworks mentioned in Chapter 2.7. The National Core Standards and the NHS Leadership Framework were used to assess each of the research districts.
- The chapter ends by looking at the relationship between the identified constraints and inefficiencies from the thematic content analysis.

4.2 Interview Analysis

The analysis of the interview was split into two phases, the preliminary analysis looking at the interviewees responses to the common questions asked across many of the interviews. From this analysis the key themes that emerged were grouped to form the categories of the thematic content analysis. Thematic content analysis is a method for analysing qualitative data focusing on identifying any patterned meaning across the data set [56]. This section focuses on analysing all the interviews that were conducted and grouping data under the common themes that emerged from the preliminary interviews analysis.

4.2.1 Preliminary Analysis

When first organising the interviews the common interview questions that were asked across the interviews were tabulated along with important notes from the interviews. The questions that are displayed in the table were not asked in the exact format during each interview because of the varied responses given in the semi-structured interviews. An extract of this analysis is displayed in Table 16 which is a part of a larger content table used in the research. Because of how the interviews were conducted, split over two rounds, the common questions asked in the interviews were used as a means for triangulation [55] and the findings displayed similarities during the preliminary analysis.

Table 16: Key notes from interview questions

Questions	Interview 1	Interview 2
What is your background?	Medical doctor	Nursing education then into management
Describe your role in the district/ region?	Administrative director (located at district level) 11 key performance areas	Role – Regional Health manager (located at subdistrict level)
How do you believe your roles plays in the whole system?	Plays a broad role because director in this district wants a more hand on approach as they believe the more on the ground management is then it allows the facilities to feel supported	Part of the management team which deals with service delivery issues and attempts to rectify and improve services applicable to region
What kind of interaction do you have at provincial level?	Policy instructions, reporting	Instructions come from the executive but if the region isn't equipped to provide the service then it is not implemented
How do you receive feedback from lower levels? Are their control mechanisms in place?	From sites but sometimes it is a struggle because district is at times bypassed when	Cost centres report back who report back health system data and any issues experienced.

	province communicates directly with hospital CEOs Engaging with sites with hands-on approach to get them to try including district when communicating directly with province	Manager provides feedback to higher levels fortnightly. Control mechanism for patients to report complaints
Describe the reporting process	Consolidated at district following a standard process	Standardised process which flows up from site. Sense that this process is more adhered to in this region but no proof of this from interview
How do instructions filter down & up between levels?	Usually flows down from provincial and district relays it to site but sometimes district level is bypassed	Received from executive director who is under the local government banner. No information about interaction with the provincial side of the structure. The Executive director is '2' levels above regional manager who interacts with unit heads and regional managers.

What could be decentralised to the district level and what should remain at other levels?	Some authority and decision making should be situated at a district level. Decentralisation would work with delegation so district can work better	Budget process has been decentralised – cost centres highlight priorities of the year to the regional office, but then individual needs and community needs are assessed Facility administrative decisions shouldn't be centralised at regional level. Facility managers have to take responsibility.
How do health campaigns/ vertical programmes affect and aid the system?	Budgets get cut and money rerouted to something else such as a new programme. Feel as if it negatively impacts district because they aren't consulted. Can be confusing with programmes within a program itself	Addressing historical balances comes through radical health programmes, some areas will focus more on a specific programme. However, funding of NGO has changed process – filters through NDoH. This has aided system because the NDoH are responsible for people's health and is an attempt to eliminate parallel funding and duplication of NGO work
Should we be focusing more on the overall health system or vertical programmes?	Consultation with district would aid the system cause then they can be proactive if budgets get cut (implied…)	Approach with a single custodian of NGO/ programme funding has made life easier

What are your thoughts on the NHI?	Budgets need to be figured out because if you want to implement NHI these will be stretched	Talk of creating a single public health system for years but it hasn't been realised and it has been costly to the country. Moving towards NHI will mean that than all health information is collected under one roof.
Do you share best practice between facilities in your region/district?	Some sites are better performing so there is an attempt to transfer learnings between facilities	Exchange ideas about what is happening at different facilities and there is an attempt to share this at the meetings.
Is there duplication of work in your region/district? *Reference to research paper that was found.*	Belief that they are doing the same work that is also done at provincial level, evidence of duplication in the district. Duplicate instructions are communicated because sometimes district is bypassed.	Evidence of two parallel processes in district where instructions can come from – provincial and then local government, which provide services to the same communities

After all interviews were tabulated, key words and phrases across the interviews meant that, a number of themes began to emerge:

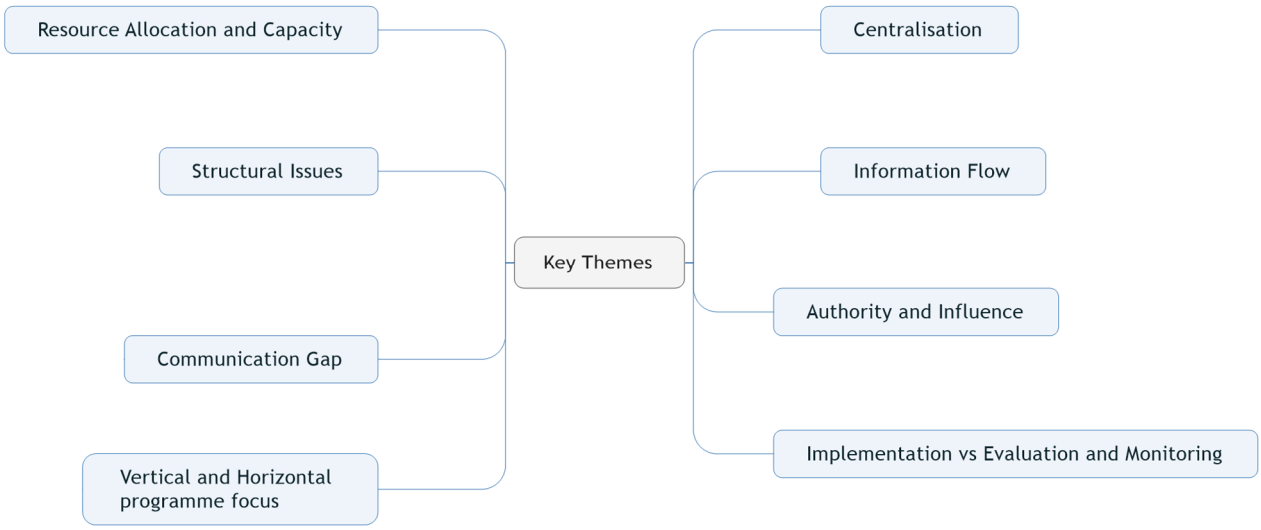


Figure 11: Key Themes Mind map

With these key themes, the researcher attempted to understand how the themes were connected in the context of the research. Because the aim of this research is to understand the current state of the district management system and how it interacts with the levels above and below, the relationships of these themes were modelled in an attempt to look at the interdependencies between the themes. This diagram provides a glimpse into the complexity of the health system in South Africa. The diagram made use of the responses and discussions that were had with the interviewees. The interactions between the themes were partially classified as either having a positive or a negative response to the block or theme which is impacted. For example, at the site level where the system sees the greatest resource constraint this is negatively affected by the centralisation of human resource delegation and authority situated at Provincial level. However, centralisation at the national level provides a form of control over the system which allows the department to strategically push down policy to the whole country in an attempt to improve the overall healthcare system across a number of facets.

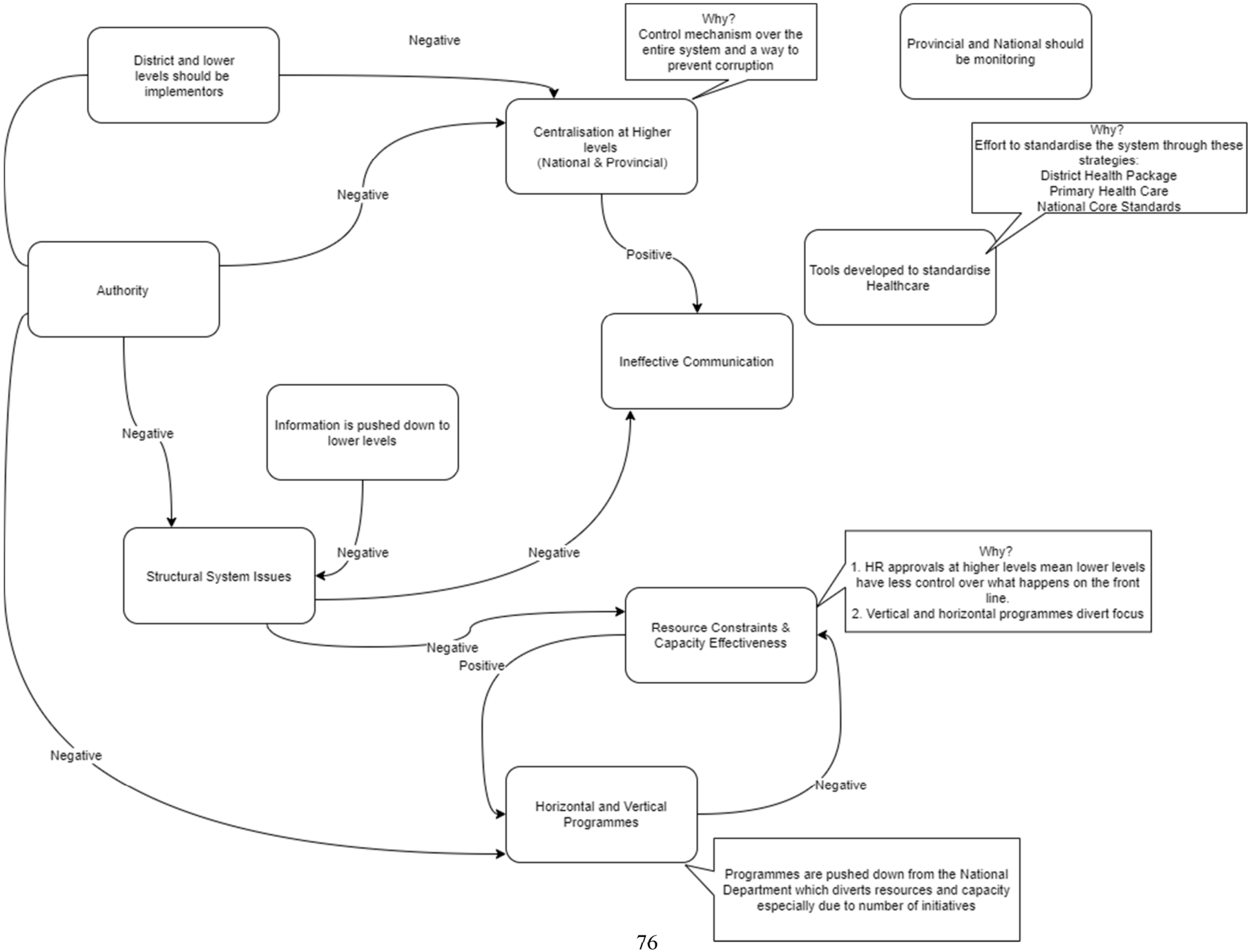


Figure 12: Relationship Diagram between Central Themes

4.2.2 Thematic Analysis

During the preliminary analysis of the interviews it was evident that a guiding structure would be required to organise the data points. As the interviewees were asked about the challenges, they faced on a day to day basis it became evident from their answers that a number of areas impact their efficiency and the ability of the district. Combining the preliminary interview analysis and the relationship diagram of the key themes, a more in-depth analysis was required of the interview data. Thematic content analysis was done for each of the interviews and revolved around the following categories:

- The structure defined by legislation
- How the structure is actually in place
- Constraints, what the associated can and cannot do
- Inefficiencies

Appendix F contains a blank example of the document that was generated and snapshots of what was filled in for each of the interviews. The data that was filled into each of the blocks contains key words, quotes and notes from the participants where relevant to the categories in the first column. Snapshots from the various categories can be seen in Tables 17, 18 and 19.

Table 17: Structure Thematic Content Analysis Snapshot

	D1	D2	D3
Structure defined on paper	All processes have to go through approval, and this is an area where provincial gets involved often - from District Manager it goes to the Head of Department - then it goes to the MEC - But it may also need to go to the chief director for approval	Set up of sub districts and districts has to be considered carefully Info has to go through the DM, so director can't go to Province first to get the ball rolling (both set up and a constraint) Department is of the opinion that care should be comprehensive	District is set up in such a way that they have influence of the budget and who gets what and how much Structurally set up like this District Health package (look into): (can also be a constraint) - determines the equipment that must be/ basic equipment per facility level - district hospital must have certain equipment for the institution to be called a district hospital - regional, tertiary and academic hospitals also have stipulations which type of equipment you can have so, if your document plan was based on making sure you have the minimum according to the basic district health package it would assist planning moving forward

	D5	D6 and D7
How it is actually set up	We currently have a system where they instructions on policy come directly from provincial but also get the same instructions from district "Got it from the province, got it from the district and got it from the programme manager, so I got it I think here 'What actually happens is that the policy comes from multiple sources - Provincial and District this set up is also an example of inefficiency. Hospital CEO - role is more like a bridge between the operational and strategic systems From the organogram - there is also a unit which deals with a '6th' unit which deals with QA, info management and communication The CEO needs to deal with more operational aspects which includes weekly meetings with the departments and reporting to district. District makes use of their own reports because they use their own. CEO is able to follow up with District when they need feedback about their reports	Access to facilities falls under infrastructure 1. National level has a policy framework for how you develop a district health system which is about the primary health care services within the district District = a geographical area which is contained within the municipal boundary District Health Systems endeavour to create an integrated approach to health Use demographic disease profiles are not so accurate but they at least use these for resource allocation, allocation made to province = division of revenue Community involvement - supposed to work with the community in terms of planning at the ward level or the catchment population. IDP process for infrastructure but it is not adequate Health is a bit different and includes inputs from other departments such as Water & Sanitation, Energy etc. - some of these inputs fall under local govt competencies while others are Provincial competencies

	HOD of units at site level are situated at Provincial level NCS is not being instilled properly at the site level, delegation is not sitting at the right level - links to constraints HR Process: Recommendation to fill positions> to District manager for support > HOD has to approve > chief director, HR management, then chief director and DDG of finance have to approve Communication comes from 2 source - Provincial and District which causes duplication	Management structures: - joint management team, who meet once a month but also if there are any special issues to discuss, quarterly reviews or when province has something to present or a troubleshoot something. - sub district level, who have joint sub district management teams, a provincial manager works with sub district managers; should meet a min of once a month (on as and when basis), the district hospital located in a sub-district is the responsibility of the sub-district manager These managers also need to meet with the local govt manager & province manager at the district level -> there is a meeting held with subdistrict management team, partners and district management team where the framework is set about how exactly the programme will be rolled out within the district. Different 'owners' of programmes in the different facilities but with the same tools & criteria > standard processes with the same tools in all facilities Office of Standards & compliance: - what it does is facilitate management and local level managers and actual service providers to see provides a tool to ensure that the standards and norms set out are met - local level complainant's mechanism but there are a number of levels: city, provincial and national level for complaints The district health council has an oversight role BUT at the same time it is an advisory function

Table 18: Constraints Thematic Content Analysis Snapshot

	D2	D5	D8
Constraints (what can vs what cannot be done)	As a province there is 18 sub districts but only 1 is functional - Bushbuckridge - only functioning sub-district because previously it was a District under Limpopo Primary care the district has a full package: - HIV - TB - Mother and childcare All dictated by the provincial and national levels Sub district managers do not have information managers, this causes issues - data register arrives at district late - therefore, decision making is done late Finance delegation done at district (to a degree) but this impacts the job of directors who do not have sub district managers below them; the work then shifts to the director - de-centralise spending categories instead of an amount?	Executive support unit which doesn't have a manager, but this unit is responsible for QA, info management, and transformation. Reason for a constraint is because these areas aren't managed by anyone although they are aspects which interact with District The hospital should have an assistant director which is not in place in this facility. 'Hospitals take the policy and tailor them for their own conditions. However, this could be a constraint because this creates some extra work for the operational level Workload of direct reports and the information that they need to report	Structure needs to be clarified at each level - provincial, district and sub district Local government is covered by SALGA agreements with organised labour Appointments are done separately Budget is another vacuum, money collected by national level and then allocated to the province in terms of health; provinces within their jurisdiction will divide their portion - question of equity - size of the clinic, programmes run in the ward all need to be taken into account when dividing the budget Compliance issues with facilities, inspections are done by National and Provincial. Decentralised vs Centralised decisions: Need to instil discipline around HR, i.e. there is a need for better management/leadership and lower levels in the system. Public vs Private: Because public services can be obtained for free people with medical aids are skewing the actual data for sub-districts if they use public service for some services and private for others this is an area the NHI can be seen as a benefit, using data to drive efficiency.

Table 19: Inefficiencies Thematic Content Analysis Snapshot

	D3	D6 & D7
Inefficiencies	Information can come from multiple sources - duplication of effort and instructions - through department circulars - also, from the Chief Director via email Governance and communication notes Leadership should be included to try identify the gap (suggestion from Director) Governance can be split into clinical governance and management governance One thing that is lacking is leadership management In Ehlanzeni, they are studying the duplication of functions - some clinics are still under province/municipality, but these have since been taken back Impacts the job of those at districts and at facility level - documents have to move from facility to district or sub districts - then it is taken to the head office until the last person has signed it - then it comes back to the institution for implementation	Provincial and Municipal responsibility needs to be clearly defined e.g. inter facility transport - who is in charge of this?? National has got certain processes and they have been trying for the past 10/15 years to enforce what the districts must do even though there is fragmented and there might be 2 authorities providing services to come out with an integrated district plan The District Health Council and the Section 79 committee are parallel functions which may have similar roles and responsibilities (check this) "So, they have to learn to define in greater detail, so that when we are measured against [other districts] they won't say X won't have this" - define every but to compare apples to apples - there is a problem with reporting and definition from district to district and province to province Procurement systems important and have big issues/impacts for health services

The categories from the thematic content analysis have been further distilled into two unique banners which will form the basis of the discussion in Chapter Five. The first banner is the System Structure, which is a combination of policy defining structure and how it is set up which contains aspects on information flow, authority and influence. This was chosen as a banner because upon preliminary analysis the aforementioned aspects all related to how the system has been structured. Under this first banner the key themes that emerged included:

- The current centralisation of approvals required from the provincial level.
- The information flow up and down the system tends to be slightly disjointed.
- Fragmentation caused under Apartheid, and the disparate systems that were in place, are still problematic.
- Disparate systems that create duplication of work.
- The authority and influence of each level.

The second banner is split into the Identified Constraints and Identifed Inefficiences. These have been grouped together because the some of the constraints and inefficiencies that were communicated to the research are interrelated. The identified constraints and inefficiencies at the district level are a view of what is experienced in the current system. Therefore to support the discussion chapter it was necessary to group together quotes from the interviews which provided insight into this banner.

Table 20: Banner One – System Structure Quotes

Health delivery is the competence of Provincial and National – D5
"Local government it's a sphere closer to the people, why is it not actively participating at the national structure where policies and everything has been decided upon because it does have an impact at the local government level" – D8
Supposed to work with the community in terms of planning at the ward level ir the catchment population – D6
Standardising care in a health system has come later because of HR and finance constraint – D9
Health is a bit different and includes inputs from other departments, [however] some of these inputs fall under local government competencies, while others are provincial competencies. – D5

“[the] district health system endeavours to create an integrated approach to health”- D5
“strategic leadership and general management of the district as a whole”- D7
Structure should be the same nationally – D6
The acts which are in place are useful systems to minimise pilfering and corruptions but can be constraining when it comes to emergencies – D6
The province has a very big head and the team is very slim. We are not given a chance to do anything – D2
“[The] structure is inverted with to many managers at the top of the system and only one at the implementation level” – D2
[As hospital CEO] my role is more like a bridge between the operational and strategic – D5
Metros are seen to have more money so may be given smaller portions by Provincial – D5
Need to instil discipline around HR, there is a need for better management at lower levels in the system – D8
No one audits the district management system – D9
Local management are not empowered to do things, Lines of authority for lower levels of the system have to wait for the bigger structures –D9
Lack of commitment and support [from higher levels] – D1
We need to get rid of fragmentation in the district level we need one authority – D5

Table 21: Banner Two – Constraints and Inefficiency Quotes

"provincial [department] is not proactive" – D1
"There are two apparently conflicting approaches to which countries should give careful consideration … The first, generally known as the 'horizontal approach', seeks to tackle the overall health problems on a wide front and on a long-term basis through the creation of a system of permanent institutions commonly known as 'general health services'. The second or 'vertical approach', calls for [the] solution of a given health problem by means of single-purpose machinery." – [22]
"the organogram is supposed to be tapering at the top". – D3
"[the] set up of sub-districts and districts has to be considered carefully."- D5
"lack of commitment and support" - D1
"come and rescue the situation [at facility level] – D3.
"the problem with the way information gets cascaded [down] to the lower levels" – D1.
"we need people in [positions] so they can be [held] accountable" – D2
"there is a difference in performance for appointed versus acting employees" – D6
"there is little room for improvements because every time they withdrew, they start afresh with something else while the previous issues have not been addressed."- D1
"There is fragmentation in the district level; we need one authority which may enable a better functioning district." – D5
"How do we begin to develop a system? [With] broad frameworks which can be adapted for lower levels." – D5
There is enough work for everyone, and the quality could be improved, but the most gains could be had at the facility level if we (district) are able to allocate our staff."- D5
"How do you begin to develop a system? [With] broad frameworks which can be adopted for lower levels" – D5.

“How do we facilitate service delivery if increasing the staff is not the ideal solutions?” – D5
But if I am able to appoint doctors and nurses then this would make sense as it is the core business for Hospital CEOs – D3
Delegations are not helping me implement improvement in the institution – D3
As a CEO you are more empowered than a director who mainly consolidates reports and sharing this information with the above level – D3
System development is challenging when you have a traditional constrained environment like ours – D6
We should not have vertical programmes – D2
Province does not see the bigger picture – D1
Province is supposed to be monitoring and district is supposed to be implementing – D1

4.2.3 Complexity of the health system

The next set of analysis that was done was a depiction of the health system about the interaction between levels of the health system from the National Department of Health all the way to the site/facility level. The blue arrows depict the flow of communication and information down each level and how some levels are skipped when communication takes place, when provincial communicates directly with the site level. It is important to note here the blue arrow between the District level and the Site level, this has been included because in District 1, there is no functioning sub-district system when compared to District 2. Therefore District 1 communicates directly with the site level. The orange dotted line arrows depict how information and communication flows back up the system. It was found that the health system has a standardised reporting process whereby information from a site level flows up through the system by a specified date within the month to report on necessary information such as patient numbers. This was the same in both districts with the difference being that District 1's facilities report the information back to the district office.

A necessary inclusion in this diagram is the 'actors' which have been included at Provincial, District and Sub-District levels. Through the interviews it became increasingly obvious that the health system is a complex system but some of this complexity has been built into the system with councils that are situated at these levels. District 2 also highlighted that because the district is a metropolitan district which includes a local government that there are two councils which are located at this level.

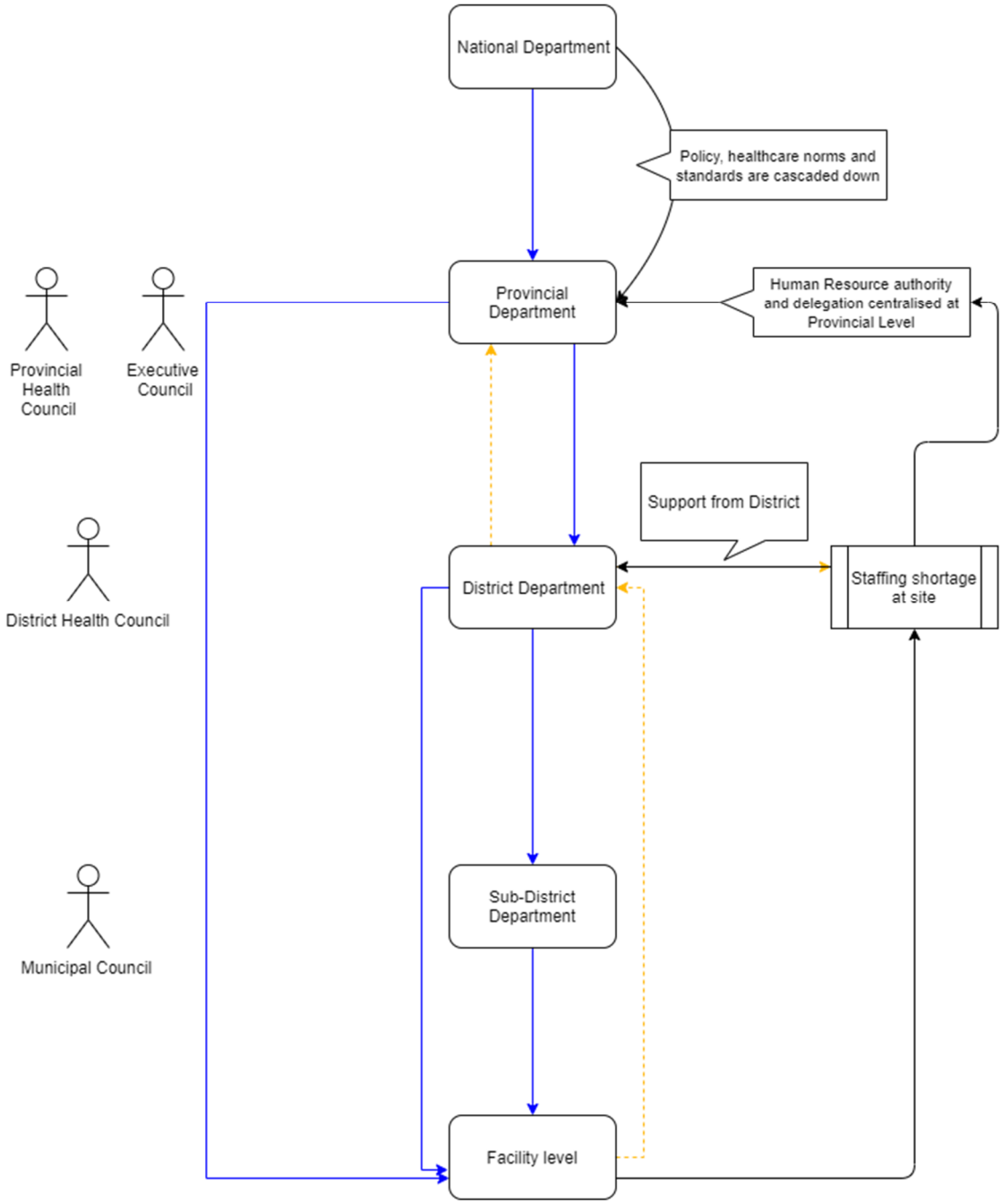


Figure 13: Health System Complexity Diagram

4.3 Observations from Interviews and Literature

4.3.1 South African Health System structure

Based on the literature and interactions from the interviews conducted in both districts the structure of the health system in South Africa can be characterised by the following simplified figure:

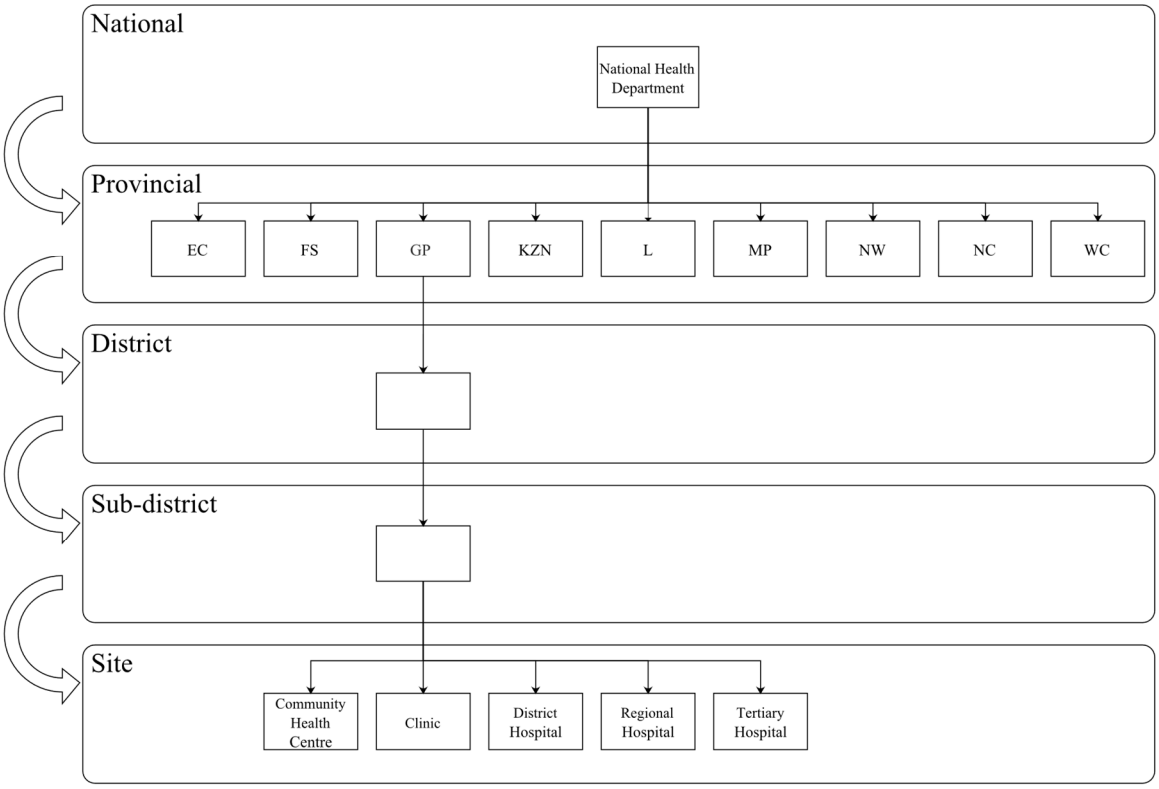


Figure 14: Simplified Health System Diagram

South Africa has one governing national department of health at level one, with nine provincial departments – one for each province – underneath as level two. Within each province, there are a number of districts forming level three of the health system, each of which has its own health management team. There are 52 districts in South Africa. Level four is located at the sub-district or regional level – differing terminology was used between the districts -, which are areas demarcated geographically within a district itself. The final level of the health system, level five, is the facility or establishment level, which is the frontline of the health system where the population interacts with healthcare.

However, at the district level, there is added complexity at each district - a mixture of district and metro municipalities each have a different number of sub-districts. The districts that participated in this research have four regions (District 1) and seven regions (District 2) respectively. It is important to clarify here that a district and a sub-district are defined by geographical boundaries and are thus determined by where they are and not what they do. At the site level of the health system, there are an estimated 4200 public facilities, that serve a population of more than 55 million people [8]. It is important to note that people who belong to medical aid schemes still have access to the public service and are thus part of the population which the public health system serves.

4.3.2 District Health structure

As the DHS is seen as an integrated approach, it is necessary to define the organisational structure that was communicated to the researcher from District 1. At the 'head' of the district, there is the district manager who is responsible for the *"strategic leadership and general management of the district as a whole"- D7*. Under the district manager, three directors report directly to the district manager. These are:

- Admin director, who operates in the realms of finance, human resources, strategic planning and monitoring and implementation.
- The deputy directors of finance and corporate services fall under the admin director's structure.
- The primary health care director, who is in charge of the implementation of the full PHC package for the district.
- The hospital services director who is in charge of the hospital services that are provided in all of the districts.

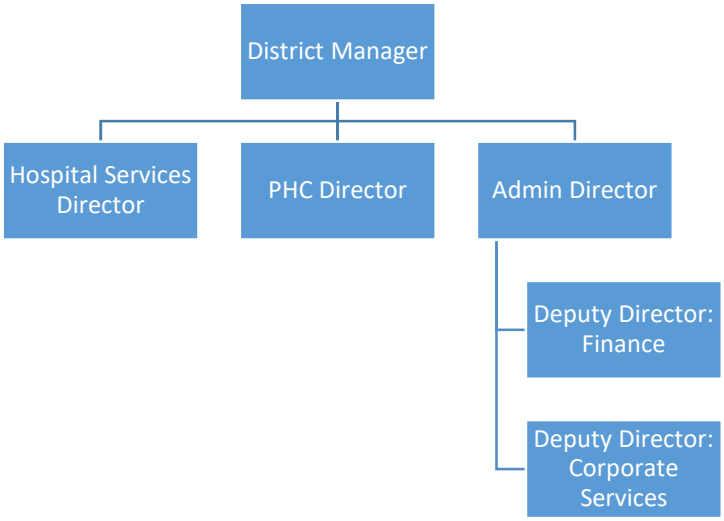


Figure 15: District 1 organisational structure

The communicated organisation structure of District 1 prompted the researcher to look into the organisational structure of the provinces that participated in the research. From these two organisational structure diagrams we can see the similarities and differences between the two provincial health departments. The Mpumalanga department, Figure 16 has directors for the following departments:

- Finance
- Human Resources
- Risk and Internal Audit
- Health Care Support
- Infrastructure Development and Technical Services
- Integrated Health Planning
- Clinical Health Support

A number of these heads of department have reporting lines to primary health care directors, district managers and health programme managers.

In contrast to this the Gauteng provincial, Figure 17, department has the following departments:

- Information and Technology
- Operations
- Human Resources
- Corporate Services
- Finance
- Facility Management

Under these departments there are managers some of which correspond to the same areas that are within the Mpumalanga health department. However, perhaps the major finding to come from looking into these organisational structures is that although they are at the same level – Provincial Departments – there organisational structures differ from one another. For example, Gauteng has an IT department looking at technology and systems and specific health programme managers. On the other hand, Mpumalanga has more a broad health programme manager and no IT department.

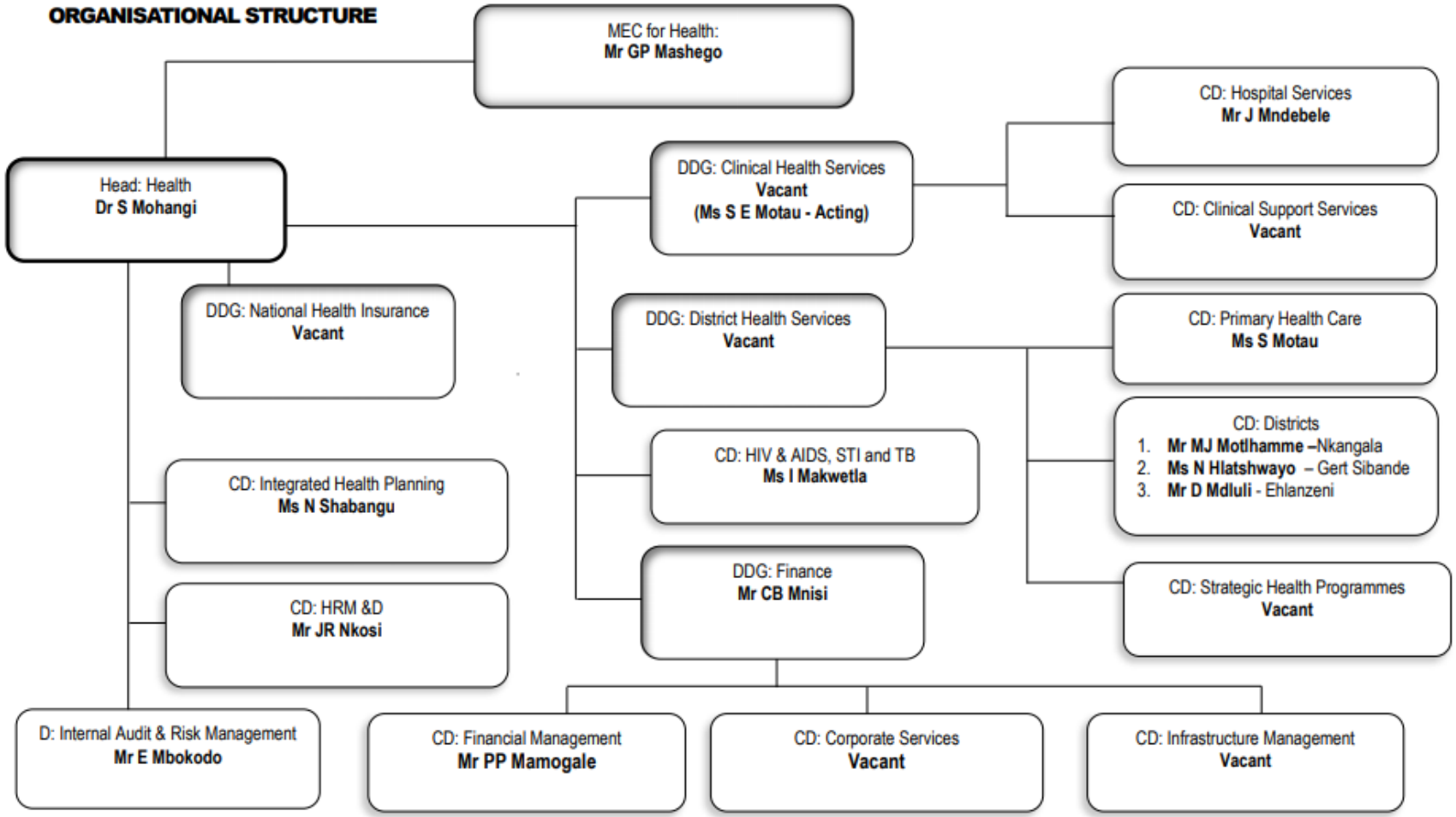


Figure 16: Mpumalanga Department of Health Organisational Structure [59]



Figure 17: Gauteng Department of Health Organisational Structure [60]

4.3.3 Human Resources Process

It needs to be noted that at the time of research and when the interviews were conducted, the hospital services director was also fulfilling the temporary assignment of hospital CEO, as the previous CEO was promoted to a provincial position.

This scenario provided an opportunity to explore how the system is set up for human resources. From the interviews conducted, it became evident that the human resources process is one where inefficiencies and constraints exist in the systems of both districts. An overview of the process was compiled from the interviews and is depicted as follows:

1. Identify the availability of funds.
2. Request for an advert, which is then sent to the provincial department.
3. The head of the department – located at provincial level – has to sign off and either approves or denies the request.
4. If approval has been received, human resources management and development generate the advert.
5. Advert goes to the public.
6. Applications go either to the district office or the provincial level.
7. Applicant profiles are processed at the provincial level and then sent to the district.
8. The district needs further approval for a panel interview to be conducted.

An appointment letter is sent out once approval for the appointment is given by the head of the department. The above process reveals that the human resources is centrally controlled at the provincial level. From a management perspective, it makes sense to have part of the HR process centralised at a higher level. This allows for provincial to have an overview of the number of health professionals at their disposal and thus gives them the ability to formulate a plan for distribution across the districts, in an attempt to allocate the resources as evenly as possible.

However, it is not clear if this distribution is then revised and there is a need to look at the constraints of this process to fully understand what HR processes should be located at which

level. As this research is focusing on the management at a district level, the needs and resource allocation at a facility level were not looked at in great detail.

4.3.4 Information Flow and Communication

The information process flow is in place for the districts that participated in this study. This process was outlined by various participants.

- Information has to reach the sub-district office by the 6th of the month from the facilities.
- The information gets processed for all the facilities in the sub-district and sent to the District office by the 9th.
- The District office then consolidates this information and sends it to the Provincial Department by the 12th.
- Finally, by the 15th of every month, this information should reach the National Department.

The type of information that gets reported to each level includes patient numbers, issues experienced at the facility level, number of patients who have TB, patients on ARVs, PHC issues, length of stay and number of children immunised. This information feeds directly into the health programmes that get implemented in the system. The horizontal versus vertical program analysis has been included in Section 5.3 - *Constraints* section. What is important here is that the process for information flowing up the system, should be the same for each district and province. This process is the same in both District 1 and 2, however this was unable to be verified across other districts, as they were outside the scope of this research.

The national department has a key project, which falls under the banner of Health Information Systems Program – the *National Health Information Repository and Data Warehouse Project*. This project hopes to have an integrated repository for health indicators and information. This ties into the District Health Management Information System (DHMIS), which is a system that contains statistics relating to health used in the public sector to track health service delivery.

However, the data quality from the DHMIS is weak and not utilised as frequently when decision making occurs [61].

The information process defined above does not account for the delay in the submission of data to the required level. As such, the timelines provided do not appear to have any built-in control mechanisms, besides the receiving manager following up to query the delayed submission. This author is of the opinion that this process yields some inefficiencies and constraints, which will be discussed in the subsequent sections.

Figure 18 is an illustration of how information flow was communicated during the interviews of this research. The information can flow following the normal structure between levels, going down the system. However, the Provincial office does seem to communicate with the Subdistrict office or alternatively directly with site level.

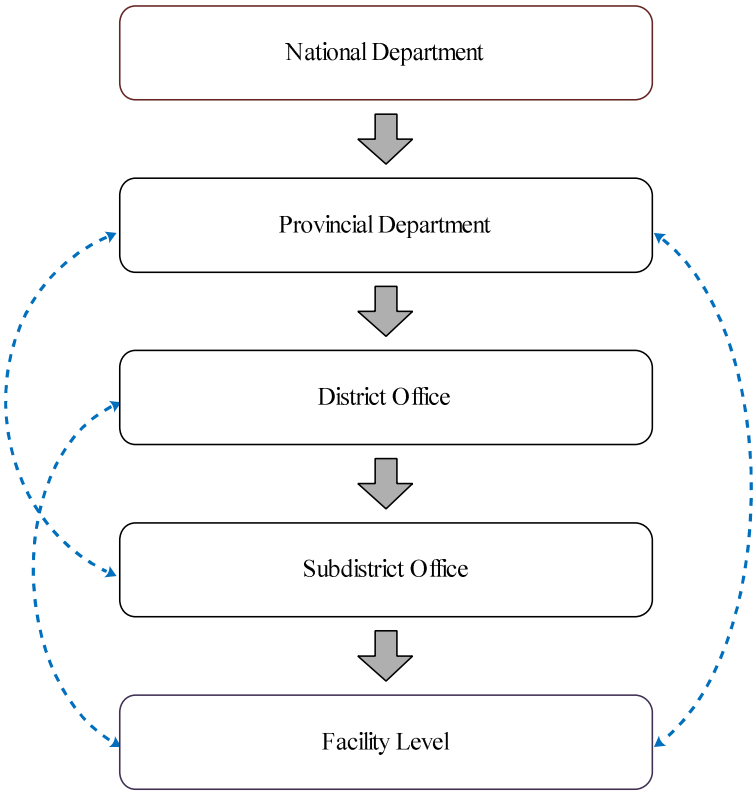


Figure 18: Communication lines between levels in the health system

4.4 Framework Analysis

The interviews from the districts in this study were grouped around a number of areas which are found in Section 2.7, but each district was assessed in terms of what the structure is currently in place defined by policy and from this current structure inefficiencies and constraints were identified.

Using the results of the interview analysis and observations, each of the research districts were assessed based on information that was supplied in the interviews with the personnel and the definitions of the framework domains. The results can be seen in Table 22 and Table 23 for NHS and NCS respectively. These criteria are defined by the NHS Leadership Framework and the OHSC's National Core Standards. Both these inputs were examined as they relate to district management; where the other levels in the health system have been completed, these were based on the interactions in the interviews. As mentioned previously based on the information gathered during interviews with the personnel, it was assessed whether aspects of the Leadership Framework and National Core Standard were met or not. This was further subdivided into whether sub-domains were partially or fully met. From the results the majority of the assessed framework criteria were partially met, with only four criteria fully met, based on the information gathered during the interview analysis. There were various contributory reasons to the failings of these sub-domains, which are discussed in Chapter 5 - Section 5.5. If the researcher felt that either of the districts fell between a rating, then the lower of the ratings was taken, as sufficient evidence was not gathered to give the higher rating. Where a sub-domain was included but no information gathered, they remain on the framework, but are marked not assessed.

This analysis helped the researcher assess the relationships between the identified constraints and inefficiencies and how these both affect the health system.

Table 22: District Analysis against Leadership Framework [35]

Leadership Framework		District 1			District 2		
		Fully	Partly	Not at all	Fully	Partly	Not at all
Managing Services	Planning		✓			✓	
	Managing Resources		✓			✓	
Improving Services	Ensuring Patient Safety	Not assessed			Not assessed		
	Critically Evaluating		✓			✓	
	Encouraging improvement & innovation		✓			✓	
	Facilitating Transformation	Not assessed			Not assessed		
Setting Direction	Identifying the contexts for change		✓			✓	
	Applying knowledge with evidence		✓		✓		
	Making decisions			✓		✓	
	Evaluating the impact						
Creating the vision	Developing the vision for the organisation		✓			✓	
	Developing the vision for the wider healthcare system		✓			✓	
	Communicating the vision		✓			✓	
	Embodying the vision		✓			✓	
Delivering the Strategy	Framing the strategy	✓			✓		
	Developing the strategy			✓			✓
	Implementing the strategy		✓			✓	
	Embedding the strategy			✓			✓

Table 23: District Analysis against National Core Standards [34]

Leadership Framework		District 1			District 2		
		Fully	Partly	Not at all	Fully	Partly	Not at all
Managing Services	Planning		✓			✓	
	Managing Resources		✓			✓	
Improving Services	Ensuring Patient Safety	Not assessed			Not assessed		
	Critically Evaluating		✓			✓	
	Encouraging improvement & innovation		✓			✓	
	Facilitating Transformation	Not assessed			Not assessed		
Setting Direction	Identifying the contexts for change		✓			✓	
	Applying knowledge with evidence		✓		✓		
	Making decisions			✓		✓	
	Evaluating the impact						
Creating the vision	Developing the vision for the organisation		✓			✓	
	Developing the vision for the wider healthcare system		✓			✓	
	Communicating the vision		✓			✓	
	Embodying the vision		✓			✓	
Delivering the Strategy	Framing the strategy	✓			✓		
	Developing the strategy			✓			✓
	Implementing the strategy		✓			✓	
	Embedding the strategy			✓			✓

4.5 The relationship between Constraints and Inefficiencies

To summarise this chapter the Table 24 looks at the key themes that emerged, the constraints and inefficiencies experienced and the effect on the health system which emerged from the interview analysis. The table is a high-level summary of how the constraints and inefficiencies are interlinked. The key themes themselves are all interlinked and begin to present the case that aspects within the health system are incorrectly placed at certain levels within the current structure.

Three quotes stood out from the interviews in the districts which conveys similar thoughts,

1. *"There is fragmentation in the district level; we need one authority which may enable a better functioning district." – D5*
2. *"How do we begin to develop a system? [With] broad frameworks which can be adapted for lower levels." – D6*
3. *"Local and Provincial both serving the same communities, but duplicating services erodes capacity" – D8*

Table 24: Relationship between Key themes, Constraints and Inefficiencies

Key Theme	Constraint	Inefficiency	Effect
Authority	District team has insufficient authority to implement decisions and adequately support sub-district and facility levels	The district manager and directors have to wait for approvals to take place at province before proceeding forward.	Increased waiting times for appoints of personnel based on approvals.
Capacity & resourcing	Because of decreased authority district has to balance resourcing between sub-districts and health programmes	Health programmes force the district to re-prioritise because the programme is pushed down to implement.	Planning becomes difficult when higher levels push programmes and decisions down to the district.
Communication gap	District reports issues and plans upwards, but higher levels do not always close the feedback loop	The district is at the mercy of a reactive provincial department who may or may not inform them of any changes to district plans.	It becomes the norm for the district level to follow up on approvals and submissions that have been made to the provincial level.

5 DISCUSSION

5.1 Introduction

Based on the findings and analysis of the previous chapter each of the banners that came out of the thematic content analysis will be discussed separately, supported by evidence from the interviews and commenting on the overall effect that these have on the health system.

This chapter has been laid out as follows

- The chapter discusses each of the banners which emerged from Chapter 4.
- Banner One looks at the structure of the health system, how it is defined on paper, and how it is actually in place will be the starting point of the discussion. This section focuses on the three key themes of centralisation versus decentralisation, authority and influence and finally, the flow of information in the current structure.
- Next, the Banner Two looks at the identified constraints and identified inefficiencies respectively, which that emerged from the interview analysis and observations.
- Next comes the District discussion using the Framework Analysis and the relationships between the constraints and inefficiencies.
- Lastly, the chapter looks at a proposed system structure that suggests how the health care system could be adapted to facilitate efficiency and effectiveness.

5.2 Banner One – Health System structure

The first banner, which came out from the interview analysis, was around the health system structure. This section serves to discuss the health system structure that became evident from the research districts, comparing it to the structure described in the NHA. What became evident from the analysis was there are three themes to consider when looking at the structure of the health system – centralisation, authority and influence and the information flow within districts.

From this structure defined by legislation in section 4.3.1 - one national department, nine provincial departments and 52 district teams - one can already see the complexity that is generated when looking at the structure as an isolated system. There is at least one district management team for each of the districts, which in turn is responsible for a number of regions, which each have their own management. Looking at the system in isolation excludes any inputs such as patient numbers or disease profiles and external factors that will ultimately feed into the health system. The external factors, which influence the health system, could be other government departments, which have the potential to create a supply of patients to the health system. These include Water and Sanitation, Energy and Roads & Transportation, for example. Other external factors could be natural disasters or disease outbreaks, which need to divert resources in the system. Furthermore, it can be seen that other departments affect the health department; this is a built-in complexity that was brought to the researcher's attention due to the additional influences of legislation, which further complicates the demand for healthcare. This was echoed by one of the interviewees:

"Health is a bit different and includes inputs from other departments, [however] some of these inputs fall under local government competencies, while others are provincial competencies." – D5

The above statement serves to highlight that the health department, as it has been set up, has to address the impacts that could be caused by other departments, which is in support of the structure. However, the way in which the structure that has been implemented, allows for grey areas concerning who is in charge of certain services and where the authority ultimately lies, determining which level in the health system has the responsibility and accountability for certain services rendered to the public. This has been echoed by one of the participants who stated that they are *"supposed to work with the community in terms of planning at the ward*

level in the catchment population" – D6. These quotes come from the same interview sitting but show opposing views when viewing the current structure.

As was outlined in Section 2.1 of the literature review, the health system in South Africa comes from a time of unequal access and distribution. This had to be addressed and as a result, the district health system was given the mandate to address the inequality. This was echoed during the interview process,

"[the] district health system endeavours to create an integrated approach to health" – D6

An important part of the structure of the health system is having adequate resources to staff the district health system. The HR process depicted in Section 4.3.3 highlight important aspects from different interviews. Appointments in this current process appear to be tedious, and it was brought up that appointments can take anywhere between three to six months to fill a position. One participant said that if you are lucky you could potentially fill a position in one month – "Roughly a month it will [be solved] if you are lucky" – D4 However, this same participant gave an example where they have been trying to fill the vacancies on their executive committee, and this has yet to be completed successfully after three years. The aspect of resource allocation comes into the equation, which is outlined in the constraints section (Section 5.3) that follows. It is important here to consider *why* there exists a process, which requires multiple approvals from the provincial department. One answer might be that HR requires a high degree of centralisation due to it being a control mechanism in the health system to counteract corruption in the public sector. The need to combat this corruption arises from the fact that the national and provincial health departments have a combined annual budget of approximately R190 billion [62]. Corruption in the public health system takes the form of moonlighting, nepotism and the sale of government jobs [62]. This control mechanism also has another prong which is to ensure that resources, both financial and human, are distributed as evenly as possible within a province and district. The reason for the equitable distribution of resources in healthcare is necessary is due to there being a global shortage of health works. The constraints and inefficiencies that this process and the control mechanisms cause will be analysed in more detail in the following sections – Section 5.3 and 5.4.

The HR process also provides some insight into the flow of informaiton and the lines of communication of the health system's current structure. When looking at these aspects it will be in terms of how the lines of communication and information flow have been set up and how they are currently in place. Due to the different levels of the health system, the national department has defined the minimum requirements for the services that need to be available to the citizens of South Africa. These minimum requirements take the form of the District Health Package, which outlines the type of care and equipment that must be in place at the different types of facilities at the site level. However, it also includes the programmes that have to be implemented in the district and the National Core Standards for facilities. A significant structural aspect, which has come from the NDoH has been the National Health Act which was outlined in Section 2.1.1, defining the setup and details of the entire health system. The NHA defines all rights and duties of both users and health personnel, regulations for health establishment and the general functions of each level in the health system. From interviews, it became evident that districts also have to deal with provincial legislation. This provincial legislation has an additional impact on the system and how it has been set up.

The NHA prescribes that each district should have a District Health Council, however from a provincial perspective this level advocates for a Section 79 Committee, which has an oversight function over the delivery of health services within a district.

Due to the multiple councils, which look at the health delivery within a district, the lines of communication that feed into the district come from multiple sources. For example district and the levels below can get information passed down the chain of command - national through to provincial and then onto district. However, at times levels seem to be skipped, as demonstrated by the ability of national to communicate with the sub-district or provincial departments with the site level. As this section is focusing solely on how the system is set up, the impact of having multiple lines of communication will be discussed under Section 5.4, focusing on Inefficiencies of the health system.

From the thematic content analysis, the key themes that emerged from the defined structure and the set up in practice are:

1. Centralisation vs Decentralisation
2. Authority and Influence
3. Information Flow at each level

Each of these themes are discussed in the sections that follow.

5.2.1 Theme One – Centralisation versus Decentralisation

Looking first at centralisation versus decentralisation, it has to be noted that a critical reason that a centralised approach has been implemented, is a form of control for the provincial department over the districts that are within their boundaries. This is to have a mechanism for spending at one central point. However, this does not mean that some aspects are solely at the provincial level. Aspects of finance are partly decentralised, including procurement and budgeting. The district has control over procurement making use of the supplier database, but this has a spending limit of R500 000. If anything is above this limit, then approval will need to be obtained from the provincial level and possibly a tender process has to be followed. When it comes to budgeting, this is centralised at the district level for the sub-district and facility level but the capital budget, for large equipment purchases, needs to get approval from the higher levels. The budget that district has control over allows them to distribute funds to the sites within their boundaries.

The national department has endeavoured to address the resource challenge of health professionals in a bid to re-engineer the PHC system in South Africa. This culminated in the Human Resources for Health South Africa [63], which is a strategy to address and plan for human resources within our health system. This strategy has a number of priorities including *health workforce planning and strengthening* and *professionalising the management of HR*. These two priorities have been highlighted here because they speak to the centralisation of the HR process. By having the process centralised at a provincial level, the province can develop a plan at a high level for increased access, while ensuring that no district improperly uses funds to employ more personnel. However, this structure generates constraints for the districts, which

hampers them from making possible improvements in the communities they serve. These constraints are discussed later on in section 5.3.

5.2.2 Theme Two – Authority and Influence

The second theme to fall under these areas is that of Authority and Influence. The changing landscape of authority and influence from a management and systems perspective is highlighted in Figure 19 below:

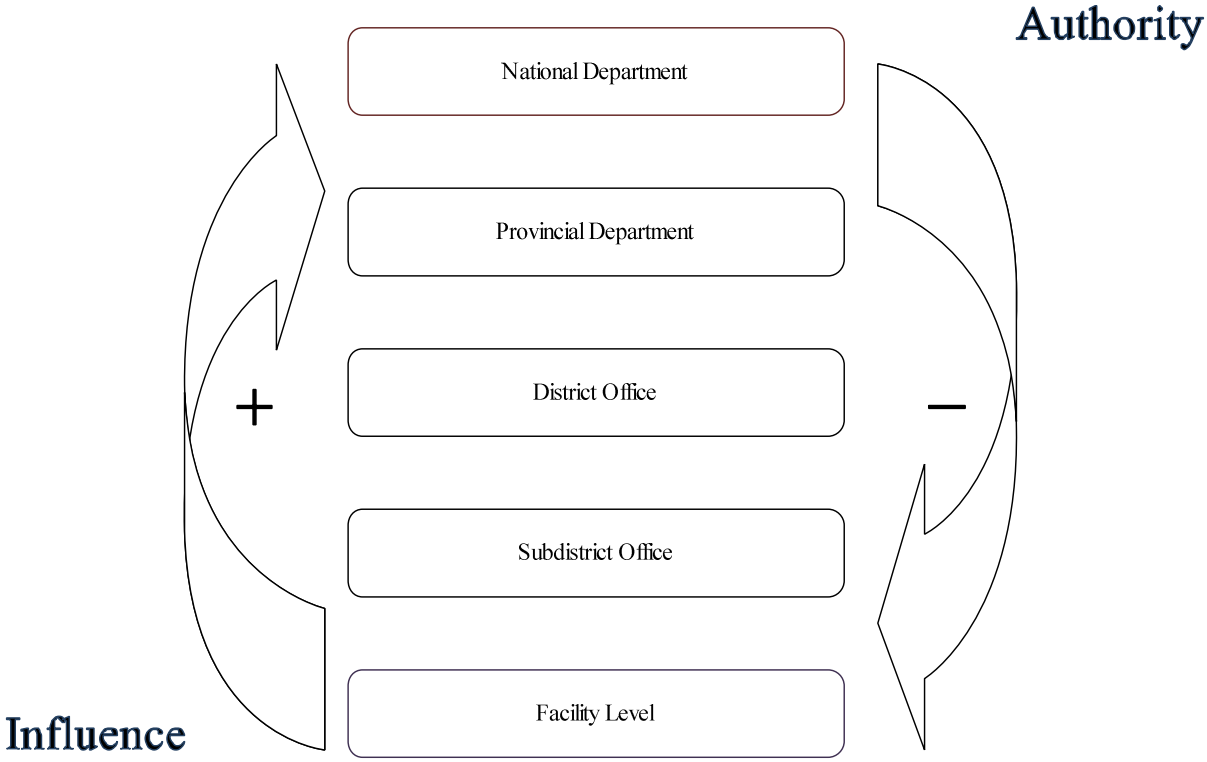


Figure 19: Authority and Influence in the health system

Figure 19 illustrates that when going from level to level in the health system, the authority decreases the closer one gets to the patients and the ability to offer influence increases as you go up the system. An example to highlight this is that at a district level they can offer support at a facility level when they are requesting approval for aspects which need to go to the provincial department. However the authority of district does not extend above their level, they understand what is happening at the facility level in their district, but they do not have a loud enough voice when it comes to getting higher levels to experience the challenges at these facilities. This was echoed by one of the research participants who stated:

"Local government is a sphere closer to the people. Why is it not actively participating at the national level where policies and everything has been decided upon, because [these policies] have an impact at the local government level?" – D8

It is necessary to communicate here, that one of the districts that participated in the research was a metropolitan municipality, while the other was a district municipality. These differing spheres of government have slightly different structures, which have been elaborated on within Section 5.4 Inefficiencies. The lack of influence and authority at a district level stems from the structure of the system, which ties into the previous theme of centralisation. Thus, because approvals are centralised at a provincial level, the district is often unable to offer the support which their associated sub-districts and facilities require. However, they are able to offer to motivate for the approval, but this influence does not always have the desired effect.

5.2.3 Theme Three – Information Flow

The final key theme for this banner is that of Information Flow. The information process flow was initially analysed in Section 4.3.4 but is outlined here again for convenience:

- Information has to reach the sub-district office by the 6th of the month from the facilities.
- The information gets processed for all the facilities in the sub-district and sent to the District office by the 9th.
- The District office then consolidates this information and sends it to the Provincial Department by the 12th.
- Finally, by the 15th of every month, this information should reach the National Department.

The analysis which revealed the information flow process in section 4.3.4, is a key theme for the Health System structure banner as it reveals important insights about the structure and inefficiencies of the system. This section focuses on the structural insights with the inefficiencies discussed in Section 5.4.

Both districts revealed to the researcher than the process that is outlined above is a standard process that should be in place in all the districts. This reveals that the NDoH understands in order to get reliable and focused information from the front line of the system there is a need to instil a standard system for reporting information to each level of the health system. This standard process directly supports the District Health Management Information System. However, what appeared to be lacking in this process was the lack of effective control mechanism to adhere to the timelines of the process. The interviews revealed that while sites and sub-districts are aware of the date's information needs to be processed upwards the manager who is receiving an email has little control of receiving the information outside of physically following up with the person responsible for reporting.

5.3 Banner Two - Identified Constraints

The next banner that content analysis focused on included any information that demonstrated the constraints experienced by the districts within the health system. The constraints could either be categorised as aspects that managers or directors could act upon and those upon which they could not act. This distinction is essential in understanding the other aspect of this banner – *Inefficiencies* – as it builds onto the case that some aspects of management are situated at the wrong levels in the health system.

Building on the Information Flow theme identified earlier, it is possible to combine this with a key theme identified across the next two areas of discussion – namely the existence of a Communication Gap. Looking at this from the *Constraints* perspective, if the provincial department communicates directly with the facility level, then this undermines the purpose of the health system structure that was established to better the health system. This is because a district office is unable to consolidate information regarding their facilities, if the facilities are communicating and sending information directly to the provincial level. This communication gap can be further highlighted when it comes to planning purposes. Operational planning is done at the district level; which the researcher is of the opinion is located at the correct level, as the district office best understands what is happening in their district and the conditions that are important to be monitored. However, when this planning – such as with the district health plan – is sent to provincial level for approvals, it is possible that the plan district communicated upwards could be amended by the provincial department. This would not be an issue as the provincial department has to plan across multiple districts, however the problem arises when these changes are not communicated to the district, or the district is not consulted on changes that are made to their district plan.

One of the district directors stated that the *"provincial [department] is not proactive" - D1* because the interviewee believes planning is a proactive undertaking to improve aspects, which the district deems necessary. However, upon receiving this proactive planning work, the provincial level appears to be reactive in terms of changing aspects without consulting lower levels about changes, which could prove necessary for the bigger picture of the health system. This issue highlights an even greater constraint in South Africa's health system – the need for lower levels in the system to have a reliable and effective feedback loop. As previously

mentioned, the provincial department does planning on a broader scale compared to the district office, making it necessary at times for them to adapt or change the plans they receive from the district they govern. However, to close the communication gap, feedback to the district level is necessary. Participants in this study indicated that the feedback loop is an important mechanism for building capacity in the district. If this communication gap constraint is not addressed, then it has the potential to create a disconnect between the strategy and vision of the national department when compared to the experience within the district system.

The National Department of Health's vision is to adjust the health system to one that focuses on preventative measures and care instead, of the curative care system of the past. A driving force of this system change is Primary Health Care (PHC). If one looks at primary care from 'outside the system', it could be said that this is a system-built constraint, as the primary care package aims to promote health programmes, including Tuberculosis and Mother & Child healthcare to illustrate examples. Unfortunately, at a district level, this PHC package is dictated by the provincial and national levels of the system. The PHC package aims to define the minimum services that are supposed to be common in healthcare facilities, as well as outline the requirements for staffing, equipment and the financial resources for health managers [64]. The national department has used this approach to look instead at the services that should be available at the different types of facilities in the system, rather than using the programme-based approach [61]. However, the programmes that are pushed by higher levels create a debate within the health system, between the need for a horizontal or vertical focus for system improvement.

As highlighted in Section 2.3, health programmes are ways for departments of health to address concerns, which adversely affect the population. The reason behind the debate about vertical programmes is due to these programmes requiring resources in an already constrained and inefficient health system. The debate centres around which approach is more useful for health system improvement. This is reiterated by requoting Gonzalez et al. who stated the following over 50 years ago, in 1965.

"There are two apparently conflicting approaches to which countries should give careful consideration … The first, generally known as the 'horizontal approach', seeks to tackle the overall health problems on a wide front and on a long-term basis through the creation of a

system of permanent institutions commonly known as 'general health services'. The second or 'vertical approach', calls for [the] solution of a given health problem by means of single-purpose machinery." [23]

This highlights the need for constraints on the system to be identified and, from the research conducted some aspects have stood out which add reasoning to both sides of this debate. In the previous section - Section 5.2 - the structure that is in place for human resources is highly centralised, as a means to control the distribution of the number of medical professionals. This control makes sense to have certain approvals situated at a higher level ensuring fair distribution of resources in the region. However, as this process itself is inefficient – explored in Section 5.4 – the control also puts further strain on the system by requiring multiple approvals. With a programme focused approach, if a new urgent programme emerges then this gets imposed upon the district to implement, while diverting from the initial budget with the possibility that the district is not consulted. This re-prioritisation of a budget, which is already under pressure strains the system even further.

A recent example of changes that occurred suddenly was the recent Listeriosis outbreak in South Africa in 2018. While this did not involve the implementation of a vertical programme, it provides an example of how the health system has to be able to respond to sudden changes such as outbreaks. The outbreak meant that the NDoH had to mobilise response teams within the provinces, ensure that health facilities were aware of what testing to perform to identify the strain of the virus, and environmental health professionals had to carry out increased inspections and check affected facilities in the health system and industry [65]. This example demonstrates further the complexity of the health system – the NDoH had to collaborate with other governmental departments to identify and trace the outbreak. Ultimately, the outbreak can be seen as a type of vertical programme requiring urgent prioritisation by the health system, including the diversion of resources that were previously planned for, to ensure that the health of the population was prioritised until a longer-term solution could be found and implemented.

When discussing vertical and horizontal programmes with the interview participants, an interesting perspective emerged from the research. If one looks at vertical programmes from the patient perspective, there is increased stigmatisation in a system that is trying to be fair and equitable to all citizens. As these programmes are deemed necessary by the national

department, the facility level has to implement the new process for the programme. This programme could therefore begin to alienate patients due to the push to address specific disease profiles. This effect of the programme approach is a system constraint for the health system that is difficult to address, as labels being placed on people receiving treatments through a program leads to stigmatisation. While this is not the focus of the research, it is certainly a challenge when looking at health system improvement, as it has the potential to affect population buy-in into programmes.

To summarise, some constraints have been built into the system as measures of control, but these appear to be emerging as stumbling blocks to improvements. However, the impact of health personnel shortages is a global issue that is challenging to overcome. This combined with ever-present financial constraints has to be seen as a constant. Thus, other strategies need to be implemented for system improvements. If one can understand what the type of inefficiencies that these constraints generate, then new ways of thinking could yield health system improvements. Thematic analysis revealed inefficiencies which come about due to these constraints. These are discussed in greater detail in the next section.

5.4 Banner Two - Identified Inefficiencies

To fully comprehend the effects the constraints, have on the health system, it is necessary to relate them to the inefficiencies that are generated in the operations of the district level. To begin, the structure of the health system defined by the national department has some built-in complexities that cause the structure to be inefficient. Due to the nature of the system set up, concerns were raised during the research that pertained to the number of people that are located at the provincial level. From these discussions, it appears that,

"the organogram is supposed to be tapering at the top". – D3

Instead, the effect that is created is that the district level could be considered a bottleneck in the system, creating a point where the system capacity becomes reduced. All the previously mentioned constraints (information flow, requests for human resources and approvals) all flow through the district upwards to the provincial level. The reason this can be considered a bottleneck is twofold:

1. The district can offer their support to the facility level when it is required to motivate for resources that have to be approved at the provincial level
2. The district manager could be considered the point of contact for information to flow up and down from the various levels.

The idea that the organogram is inflated above the district level was corroborated by participant D2 who stated:

"[The] structure is inverted with to many managers at the top of the system and only one at the implementation level" – D2

Because of this point to come out of two interviews Figure 20 is an illustration of this information bottleneck indicating how the district office appears to narrow lines of information transfer, before it opens up again going up to the provincial department. This set up was echoed through the interviews when participants suggested that any information should go through the

district manager to get approvals from the provincial department. It is important to note here that at the district level the directors and district manager report to multiple individuals at the provincial level.

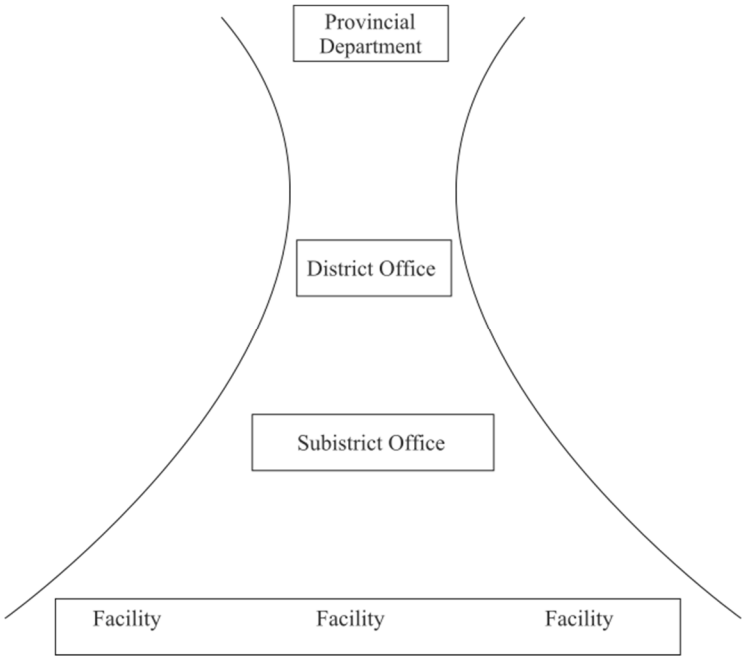


Figure 20: Bottleneck effect at District level

For example, above the district manager at the provincial level there are chief directors for PHC, hospital services, corporate services, HR management, infrastructure and monitoring and evaluation. Along with these chief directors there are also HODs and the Chief Financial Officer to consider. From this, one can see that when a district manager requires approval up the system, it has to go through multiple sign-offs before going down the system again. The structure, with centralised approvals situated at the provincial level that has been implemented as a part of the DHS, creates a constrained and inefficient system in which the district operates. Instead as demonstrated by the reporting lines for the district manager who is reporting to multiple chief directors and Figure 19 from Section 5.2.2, the provincial organogram appears to be bloated, when compared to the district team, which is constrained. The inefficiency here is that resource allocation does not appear to be adequately planned for in the DHS. Looking specifically at District 1, the management team has to support four sub-districts, one of which is the only functional sub-district in the province. When the cause of this was queried, it was conveyed that the sub-district in question was previously a district in another province. This newly included sub-district was inherited, but in doing so functionality was lost because the

staff were not easily replaceable – the jobs were relegated to a sub-district role and not a district role – and the new structure had to align with the new provincial structure.

The example of this district becoming a sub-district, highlights the inefficiency of the current structure. With the demotion to a sub-district, there would be a need to realign the structure to fit with the role of a sub-district office, which could have included people having to vacate and change certain positions. However, the fact that the sub-district had to align with the new province's structure, should be a warning sign in the system. When looking at sub-districts, the structure should ideally be standard regardless of the district and province where it is located. The sentiment here was again echoed by a research participant who stated that:

"[the] set up of sub-districts and districts has to be considered carefully."- D5

If a director in the DHS is stating this, it is another warning sign for an inefficient structure of the system. The district and sub-district structures should be standardised with the only difference being the geographical areas of the district or sub-district. In the case of the new sub-district in District 1, it has now lost some of its functionality trying to realign to a different structure. This structural issue, in fact, leads to more constraints causing inefficiency in the system: the constraints of authority, influence and resource allocation.

Firstly, the focus will be on the resource and HR constraint. The HR process in section 4.3.3 depicted a process, which included multiple approvals being needed and the 'up-down-up' motion of information for a manager at the district level or below to be able to appoint someone. The author understands that this process allows for control mechanisms to be put in place to curb corruption in the health sector. However, due to the nature of requiring several approvals, increased waiting times are experienced when appointing people into the system.

The health system is a labour-intensive system and the inefficiencies experienced around allocation of people gives the impression at a district level that there is

"lack of commitment and support" - D1

From the upper levels in the system, the apparent lack of support from a provincial level becomes an inefficiency that ties in with the communication gap that the district management team experiences, when interacting with the provincial department. As highlighted in section 5.3, a communication gap exists between the provincial and district level. This 'grey area' comes into the system from multiple angles. The first aspect being the flow of information between the different levels. Information can come from multiple sources, either through the established structure, or jump across levels with higher levels communicating directly with the lower levels. The grey arrows represent the communication through the defined structure, whereas the dashed arrows show how levels are missed in practice.

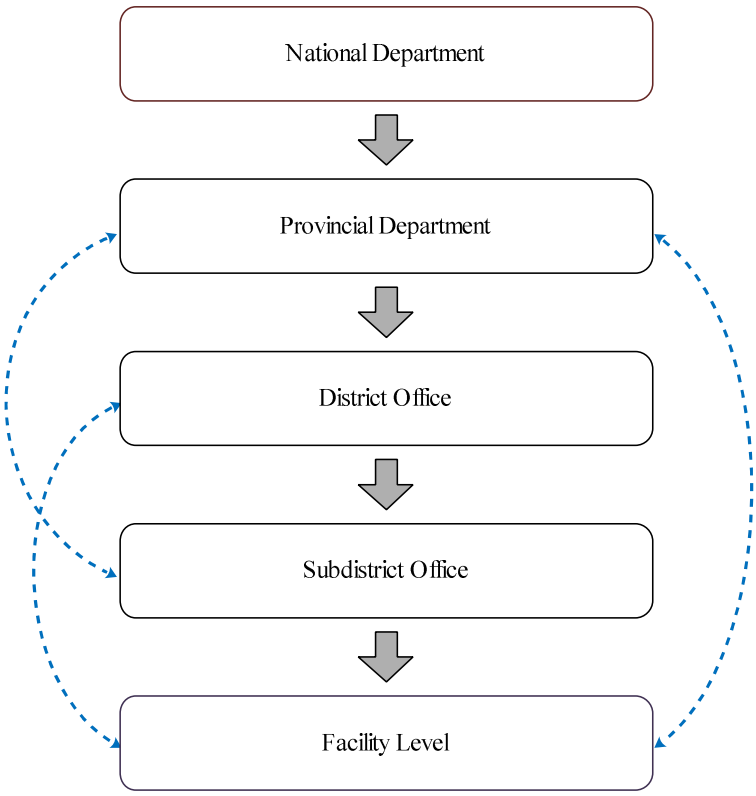


Figure 21: Communication lines between levels in the health system

Figure 18, placed here for convenience, depicts the communication lines obtained from the analysis in section 4.3.4. The duplication of effort highlights another inefficiency that exists in the system. It is important to note here that District 1 communicated that they only have one functioning sub-district and, consequently the district management team often has to communicate directly with the facility level. The structure that is supposed to be in place – the

DHS - for this district creates the inefficiency experienced here. A reason behind this inefficiency is that the directors have to

"come and rescue the situation [at facility level] – D3.

This was stated during the interview process when discussing the constraints of the HR process. The interviewee in question, who is a director in District 1, was fulfilling a second role as the CEO of a hospital, as the previous CEO was promoted to a provincial role. This stood out as the second aspect of the communication gap, due to the fact that the director is now required to fulfil two roles, one as a district director and the other at facility level as the CEO. This highlights the inefficiencies of the communication gap and HR approvals. A replacement for the previous CEO was not found, before his new role was accepted at provincial level. Instead, the director has stepped into the position on an interim basis, due to the crisis created. When the timeline for a replacement was questioned, the interviewee stated that it could take anywhere between three to six months to get the role filled. The timeline presented demonstrates the lengthy process managers and directors have to go through when trying to address HR needs in the districts. The fact is now the district has to begin the process of recruitment to replace the CEO, which requires the approvals from the provincial department, where the CEO was promoted to. This highlights

"the problem with the way information gets cascaded [down] to the lower levels" – D1.

The structure of the health system should be an attempt to prevent the miscommunication between the different levels. Control mechanisms should be in place when the district is impacted due to HR constraints, such as when a person gets promoted to another level. What is missing here is that the provincial department was again reactive when it comes to addressing a constraint in the system. As previously mentioned, the process for replacing the hospital CEO should have begun before the switching of roles instead of having the district having to come in and remedy the situation after the fact.

Another inefficiency that arose from this situation is a person occupying a position on an interim basis. Some research participants believe this is highlights an inefficiency because:

"we need people in [positions] so they can be [held] accountable" – D2 and
"there is a difference in performance for appointed versus acting employees" – D7.

Both these quotes from participants demonstrate that inefficiency generated when the district does not receive adequate support from the provincial level. Instead as stated earlier, the directors have to rescue the situation at the operational level, because of the communication gap and the stumbling block of the HR process. There is very little control from a district perspective when it comes to addressing the human resource constraint. This sentiment was echoed in District 2 when this constraint was discussed with participants in the district. District 2 also experiences the constraint having not enough person-power to address the needs of the population. However, more insight into how the district handles people capacity was revealed from interviews in this district. At the district level, the management team has to perform a balancing act when supporting their sub-districts. For example, if a region or sub-district requests support for the recruitment of four nurses, the district will support the approval of three nurses for the requesting region and redeploy the other nurse to a different region. Unfortunately, this is only a temporary solution for the structural symptoms and does not address the bigger constraint and inefficiency that has been created.

With the constraint of authority, some inefficiency emerges from this when looking at it from the district's perspective. The authority diagram depicted in section 5.2.2 (Figure 19) ties into the inefficiencies experienced by the district, when health programmes are mandated by the higher levels. These programmes look for small rapid gains [2] for specific disease profiles or potential outbreaks. They pull resources from an already constrained health system, or they divert a district's resources in the pursuit of smaller rapid improvements. The fact that these health programmes are forced on the district makes it increasingly difficult for the district to look for improvements,

"there is little room for improvements because every time they withdrew, they start afresh with something else while the previous issues have not been addressed."- D1

Vertical programmes put a strain on the resources and capacity of the DHS, because the short-term gains are noticeable compared to horizontal programmes, which are a longer-term view.

Some interview participants indicated that the higher levels do not see the bigger picture of whole system improvements as a benefit to everyone. These thoughts echo McCoy et al. who stated previously, as in section 2.3.2, that by expanding treatment programmes instead of investing towards the whole, system improvement is a contributing factor to weakening the health system [24].

5.5 District Discussion against Frameworks

Section 5.5 builds on the Framework analysis of Section 4.4 by grouping the discussions of each district under the framework and contrasting each district against each other.

5.5.1 NHS Leadership Framework

When looking at the Leadership Framework with the aim of evaluating whether it has been met across the organisation – Stage 3 – both districts were on par with one another with two exceptions. For the management of services and the resources sub-domains, both districts understand the need to tailor any policy or programmes they receive from higher levels for the needs of the communities they serve. However, because the district level lacks the autonomy to effect immediate change without the approval from the provincial level, this criteria will remain only partly achieved. Any strategic plans or vertical programmes mandated from above the district, and they have to divert resources for implementation. These actions by both districts tie in with the sub-domain of framing strategy, which both districts fully achieved.

When receiving the strategy from the provincial or national departments, each district has to interpret the strategy and align it with the communities they serve. Both districts understand how to tailor the strategy for the benefit of their facilities and populations. Where both districts do not achieve the delivery of strategy domain, however, it falls under the sub-domain of developing the strategy. While understanding the needs of their communities is important, the district teams indicated that they would want a more active role when it comes to developing health system strategy and, in turn, policy. The main reason this was conveyed is that the district is closer to the implementation level and as such they have a better understanding of what kind of thinking would be beneficial for improvement. By the strategy being communicated down, this knowledge does not make it into the broader strategy of the health system. The only area within this framework which showed a difference between the research districts is the *applying knowledge and evidence* sub-domain. District 2 understands that the health system has a capacity or HR constraint, so alternative ways of working need to be developed or looked into to mitigate the constraint. From one of the interviews with District 2, the following was stated,

"How do you begin to develop a system? [With] broad frameworks which can be adopted for lower levels" – D5.

This demonstrates that District 2 understands that for the health system to move forward frameworks have to be developed, which can be scaled to the appropriate level for improvements to occur. When contrasting this with District 1, who partly achieved this sub-domain, this district feels constrained by not receiving adequate support from their province. However, the researcher believes that while District 1 has the same knowledge about what occurs in their district as District 2, this knowledge falls flat due to the structure in the district. District 1 does not have a working sub-district system, and as a consequence, the district team is stretched across their regions in an attempt to address their concerns.

For the domain, *creating the vision,* both districts partly achieved each of the sub-domains. The reasons behind this is that from the interviews conducted both districts engage with the levels below them to understand their needs, and subsequently adapt strategy and policy for these needs. However, these districts both indicated that it was often difficult to have a loud enough voice when in communication with the higher levels. This lack of authority experienced by the district meant that at times the provincial department becomes the implementers of the vision at the facility level.

5.5.2 NCS Analysis

For the NCS Framework, a number of sub-domains from the original framework presented in section 2.7 were not been assessed for the district level. These have been left in the framework because they are necessary for assessing lower levels of the system, namely the sub-district and the facility level. Of the research districts, District 2 received the only fully achieved sub-domain, *strategic management*. This sub-domain looked at whether the structure in place was appropriate and able to deliver health services efficiently. While both districts have their inefficiencies and constraints, District 2's structure is an example of what the DHS set out to achieve. The district monitors the activities of their sub-districts giving the district teams some freedom to explore ways for improvement in a constrained system. Comparing this to District 1, the structure currently in place within this district means that this sub-domain is not achieved. The dearth of functioning sub-districts makes the structure in place an inefficiency in this

district, as it forces the district office to fulfil the roles of district and sub-district combined, placing more strain on the DHS in the region.

The other sub-domain which highlighted a difference between the districts was that of *HR management and development*. District 1 stressed that they have very little control over HR within their district. This district highlighted the challenge of waiting for approvals from HR from the provincial level, while also stating that the provincial department offers them very little support. Contrasting with this, District 2 partly achieved this sub-domain for how they adapt to the HR constraint, due to the awareness they demonstrated of the HR process and its impact on the system. District 2 has the same authority as District 1, in that they have to wait on approvals from their provincial department. However, District 2 tries to balance people resources across sub-districts by the redeployment of human resources to struggling areas.

It is important to note that with the NCS Framework definitions of domains and subdomains do not have the same contextual meaning as in the Leadership Framework. This ties the adoption of these standards into the South African, health system as these were implemented with the focus placed on the health facility level. This setback of the NCS Framework is highlighted because moving forward for health systems improvement requires this framework to address higher levels within the health system.

5.6 Proposed System Structure

From the thematic analysis, the assessment of districts against the research frameworks and the reltionship between constraints and inefficiencies the following model is proposed for the structure of the health system.

Table 25: Proposed Structure for the healthcare system

	Strategic	Tactical		Operational
Level	National	Provincial	District	Sub-district Facility
Role	Development of national policy and the strategy for health systems across the country.	Adaption of the national policy and tailoring it for the needs of each districts. The focus should be on monitoring and evaluating the districts instead of attempting to implement at the operational level.	Further tailoring of the policies for the communities, they serve.	Daily operation of the core mandate of the health system – delivering quality care to the population.
Changes to the current structure	Ensure that the DHS is correctly implemented across the districts.	Clearly defined responsibilities for the province and lower levels.	The district should have increased authority, with certain aspects they have direct control over being decentralised and monitored by provincial.	

From the interviews and analysis conducted, the model as mentioned earlier makes suggestions about changes which should be made to move the South African health system forward. Starting with the highest level – national department. This level needs to ensure that their vision of the DHS is being adhered to across all provinces and districts. The DHS should be standard across all areas, and the system should not have cases where a district needs to align its structure to another province if geographical boundaries are changed. A standardised structure needs to be reinforced by the highest level and align with its strategy. If the case of not having a functioning sub-district arises, this should be cause for concern with quick rectification, as should be the case in District 1.

The provincial level needs to have a more tactical approach than what has been portrayed through interviews. The responsibility of the provincial department should be to monitor and evaluate the districts within their boundaries. With this responsibility, the provincial department should be in a better position to support and address challenges being experienced in their districts. Furthermore, some authority needs to be decentralised to the district level to increase the district's autonomy. Looking at the district level, the district should be the bridge between the province and frontline levels. At the moment, it appears that the district is merely in place to filter information up to the provincial level. By delegating some authority, particularly regarding HR processes, to the district level, this level should then be more aware of the room for improvement.

With this in place, the district should have oversight of the HR budget to be able to respond efficiently to sub-district and facility level if possible, to hire new staff without having to request this from the provincial department. Ultimately, the budget and finances should still be controlled at the provincial level, and if any changes need to occur then approval should be sought by the district. Then, the sub-district and facility levels should be considered the operational levels of the system. These levels focus on the core mandate of delivering healthcare to the citizens of the country, while being actively supported by preceding levels.

5.7 Summary

"How do we facilitate service delivery if increasing the staff is not the ideal solutions?" – D6

And

"*Province is supposed to be monitoring and district is supposed to be implementing*" – D1

To conclude this section, the quotes above highlight an essential consideration, as working in an environment that is traditionally constrained – echoing some constraints that are experienced in other health systems – requires a different way of thinking to facilitate improvement. The assessment of the research districts against the research frameworks ties into the constraints and inefficiencies experienced through the key themes of authority, the communication gap and capacity issues. However, while both districts experience these themes to varying degrees, a major consideration, is that the DHS when it is correctly in place, aides the health system. Participant D1 echoes this sentiment because the district team is supposed to be seen as the implementors but because of constraints and inefficiencies built into the system some of the implementation is done by the provincial level.

District 1 lags in some measures when compared with District 2 because the sub-districts are functioning in the latter district. However, to progress with system improvements in healthcare, the research frameworks presented here need to be adapted for the various levels in the structure. This would enable the provincial, district, sub-district and facility to have a standardised comparison tool for assessment.

Even though both districts partially achieved most of the sub-domains, this level of achievement does not necessitate improvements for the system. The focus of the report was to highlight constraints and inefficiencies, which are better revealed by examining fully achieved and not achieved sub-domains.

6 CONCLUSIONS AND RECOMMENDATIONS

The primary finding from this research shows that the two districts studied have similarities between their interactions with higher and lower levels within the health system. What is concerning is that while the district health system has been implemented in both districts, improvements within these districts are hindered by the structural set up of the system, whereby centralisation of approvals is required at the provincial level. Another concern is the level of awareness that each district displayed, which was highlighted in how the different districts approached concerns within their individual environments.

6.1 Summary and Conclusions

This research used frameworks from to assess district management in the research districts using standards already established for South African healthcare facilities, as determined by the National Core Standards. In conjunction with this, leadership qualities from the NHS leadership framework were drawn upon to understand management at the district level. From this assessment, a proposed structure for South Africa health system was generated to properly identify the focus areas required at strategic, tactical and operational levels in the system.

To conclude this research, it is necessary to refer again to the research problem statement and the aim of the research:

Problem statement: South Africa currently has a knowledge gap for assessing the current state of health systems management and improvement.

Research Aim: to understand the current state of management structures in the district health system and assess how the current structures in the health system affect the districts.

From the findings presented in this research report, the following conclusions are drawn:

1. The current structure of the district health system is not standardised across the research districts. District 1 was performing roles spanning district and sub-district responsibilities due to their sub-district system not being functional, which hindered

their ability to focus on district priorities. District 2 demonstrated a better application of knowledge to addressing concerns within their district.

2. The framework used to assess each district allowed the researcher to gain an overview of which areas require urgent improvements and which areas could potentially be explored and aided with further research.

When exploring the interactions that occurred between the districts and other levels, it emerged that both districts are aware of the concerns that hamper the delivery of healthcare. However, District 2 appears to be at a higher level of understanding when it comes to trying to overcome the challenges faced. Conversely, District 1 attempt to address their concerns by appearing to claim that more personnel presents the most effective solution to their problems. With the healthcare system facing the constraint of constant under-resourcing with regards to personnel, and thus a constrained capacity to provide care to the population, the district level needs to be empowered by higher levels to work on improving efficiencies within current capacity. To support this empowerment of the district level, the provincial level needs to move into a tactical role, through monitoring and evaluating the districts and providing support to the districts. Thus, the DHS can then be the bridge between the tactical and operational levels, if authority is delegated to the district level.

The objectives of the research were

1. To investigate best practice frameworks applicable to healthcare management structures and adapt these frameworks for assessing the DHS.
2. To compare selected health districts against the adapted frameworks.
3. To develop a proposed system structure to investigate the gap that exists in the current health system.
4. To provide recommendations that allow the expansion of this research for future studies.

Objective 1 was achieved because the research found frameworks that have been developed to assess standards and leadership. The National Core Standards and NHS Leadership Framework were research and their applicability to the DHS were assessed. Nonetheless these existing frameworks did contribute in the development of a proposed system structure model for the DHS and the South Africa health system.

Objective 2 was partially achieved through the assessment of each district using the frameworks found from Literature. This objective was only partially achieved because not all the criteria from the frameworks were assessed and the frameworks had to be adapted for the district level of the system

Objective 3 can be considered partially achieved in this research. The reason for this is because two districts in two separate provinces were participants and these were used to develop a proposed structure for the health system. This proposed structure looks at what should be at which level and defines levels as either strategic, tactical or operational. However, this is not a representation of all the districts in South Africa and can only be considered a starting point.

Objective 4 was achieved over the course of the research. The reason for this is because the propose system structure that has come out of this research is an attempt to dissipate the identified constraints and inefficiencies. This however is only a starting point for further research and recommendations have been outlined for any future research.

6.2 Limitations of study

Perhaps the main limitation of this study is that only two districts were assessed with the frameworks used. Because of this fact, the findings of the study cannot speak for what is happening overall in the provinces where the districts were located and serves as a minority of the 52 districts that are throughout the country. Although this work serves as the foundation for looking into DHS research – elaborated on in Section 6.3. Also, further investigation is required to adapt the research frameworks specifically for the district level. The frameworks presented in this research provided a starting point to understanding of the structures in place at the district level.

Another limitation is the timeline of when the interviews took place and the actual phases of the research. District 1's interviews followed the preliminary interview schedule and once approval was obtained for District 2 – which needed clearance from the district office. The interview schedule was adapted to have follow up questions for District 1 while District 2 had to be interviewed to answer the theory questions. The time in between meant some of the questions which were asked during round 1 were not included because the questions did not yield useful information.

6.3 Recommendations for future work

There is room for further work in analysis of the district health level within the South African healthcare system. Delegation of authority to a district level will need to be researched to understand the consequences of increasing autonomy at the district level. However, combined with this potential avenue of research, the provincial level will need to be investigated to ensure that the appropriate control measures are in place, which will prevent districts from working outside their scope.

Moving forward, the frameworks used in this research needs to be adapted for the district level. The National Core Standards form a stepping-stone for understanding the standards that are required for the facility level. These standards need to be expanded with the correct context for each domain being upgraded to the scope of work carried out by the district. By implementing standards for what district management can and cannot do, the hope is that it will yield a more effective district health level. The NHS leadership framework already has an understanding regarding the kind of leadership needed at different levels within a healthcare system. With the National Department of Health wanting to move to a more comprehensive public health system – National Health Insurance – the NHS domains need to be tailored to this strategy and vision.

By seeking to build on how each level of the health system interacts within the health system, it is the researcher's belief that the inefficiencies and constraints experienced in the system could be improved, thus improving the system at various levels.

Because only two districts were involved in this research, there is room to expand this research into other districts and to other provinces in the country. A potential roadmap for furthering this research would be to have a more rigorous and standardised set of interview questions while keeping the semi-structured approach to interview to allow for insights from the interviewees. Going with this standardised approach while first expanding the research into the provinces already visited has the potential to lay a foundation for further research.

By combining the frameworks used a standardised set of questions and by involving provincial offices and more district offices it is the belief of the researcher than this research can benefit healthcare in South Africa.

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Appendix A: Hospital Characteristics

Table of the types of hospitals in the country is for contextualising the health system at facility level.

Table 26: Types of Hospitals in South African Public Healthcare Sector

Type		Number of beds	Support received/ given
District		• Small: 50 to 150 • Medium: 150 to 300 • Large: 300 to 600	Supports PHC. Receives outreach and support from Regional hospitals. Serves defined population within the district.
Regional		Between 200 to 800 beds	Must provide 24-hour health service in a number of fields. Receives support and outreach from tertiary hospitals.
Tertiary		400 to 800	Specialist level services and subspecialties. Receives referrals from regional but not limited to the province.
	Specialised Hospitals	Max 600 beds	Provide specialised health services such as TB and psychiatric facilities.
	Central Hospitals	Max 1200 beds	Must be attached to a medical school. Must conduct research and training Tertiary hospital services and highly specialised units.

Appendix B: Ethics Clearance Certificates

R14/49 Mr Eduan Stoop

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M160483

NAME: (Principal Investigator)	Mr Eduan Stoop
DEPARTMENT: Research Unit - iMap	School of Mechanical, Industrial and Acronautical Engineering, Ehlanzeni Health District
PROJECT TITLE:	Assessment of District Health-Management Structures and Service Delivery Processes to Identify System Inefficiencies and Knowledge Gaps
DATE CONSIDERED:	06/05/2016
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dieter Hartmann
APPROVED BY:	Professor P Cleaton-Jones,Chairperson, HREC (Medical)
DATE OF APPROVAL:	18/11/2016

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193. University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in April and will therefore be due in the month of April each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

R14/49 Mr Eduan Stoop

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M160483

NAME: **(Principal Investigator)**	Mr Eduan Stoop
DEPARTMENT: Research Unit - iMap	School of Mechanical, Industrial and Aeronautical Engineering, Ehlanzeni Health District
PROJECT TITLE:	Assessment of District Health-Management Structures and Service Delivery Processes to Identify System Inefficiencies and Knowledge Gaps
DATE CONSIDERED:	06/05/2016
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CONDITIONS:	
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Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

GAUTENG PROVINCE

Joburg

JOHANNESBURG HEALTH DISTRICT

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E-mail: eduan.sloop@gmail.com

Ref: 2016-17-035

Doer: Eduan Sloop

Re: Evaluating business processes within health system districts

Your application dated **2016/10/12** refers.

The District Research Committee has reviewed your application. This letter serves as an in-principle approval to access the Districts Health facilities (mentioned below) for the above project subject to following conditions:

The facility to be visited: All Facilities Region F

- The research can only commence after you submit an ethics clearance certificate from a recognized institution.
- This facility will be visited from 15/10/2016 to 15/09/2017

Region	Regional Health Manager	Contact No.	Cell phone
F	Mr Peter Mathole	011 493 1259	082 772 0582
F	Mr Oupa Montsisa	011 685 3130	082 467 9423
F	Mr Peter Mathole	011 440 1259	082 772 0582

- You will report to the Facility Manager before initiating the study.
- Participants rights and confidentiality will be maintained all the time.
- No resources (Financial, material and human resources) from the above facilities will be used for the study. Neither the District nor the facility will incur any additional cost for this study.
- The study will comply with Publicly Financed Research and Development Act, 2008 (Act 51 of 2008) and its related Regulations.
- You will submit a copy (electronic and hard copy) of your final report. In addition, you will submit a six-monthly progress report to the District Research Committee.

- Your supervisor and University of South Africa will ensure that these reports are being submitted timeously to the District Research Committee.
- The District must be acknowledged in all the reports/publications generated from the research and a copy of these reports/publications must be submitted to the District Research Committee

We reserve our right to withdraw our approval, if you breach any of the conditions mentioned above.

Please feel free to contact us, if you have any further queries. On behalf of the District Research Committee, we would like to thank you for choosing our District to conduct such an important study.

Regards

Dr R Dismilla
Executive Director
City of Johannesburg
Date: 9/11/16

Ms M Morewana
Chief Director
Johannesburg Health District
Date: 24/10/2016

Appendix C: South African Health System Context

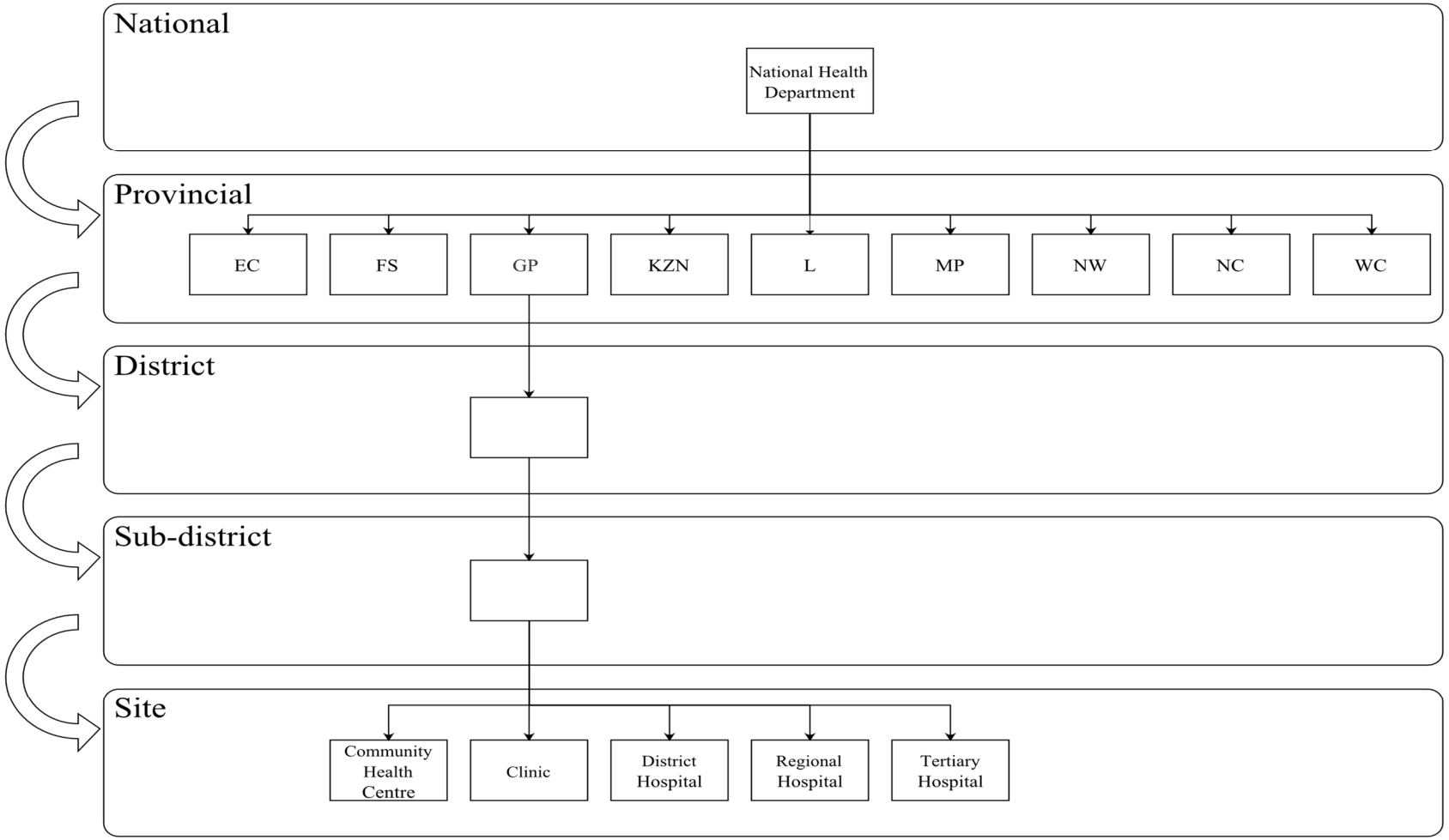


Figure 22: Simplified depiction of South African Health System

Appendix D1: Domain 5 of the National Core Standards

Table 27: National Core Standards Domain 5 with sub-domains, standards and criteria

Sub-domain	Standard	Criteria
5.1 Oversight and accountability	5.1.1 The national / provincial department or parent company oversees and supports the hospital or clinic.	5.1.1.1 The Auditor General monitors compliance of the establishment ** only applicable to the public sector*
		5.1.1.2 The provincial department or parent company provides guidance to the health establishment on matters related to governance
	5.1.2 A functional governance structure is in place	5.1.2 A governance structure is in place and functional at the health establishment (i.e. Hospital Facility Board, Community Health Forums and/or private sector equivalent)
	5.1.3 The governance structure ensures quality care and good management is provided	5.1.3.1 The governance structure ensures the strategic direction meets stakeholder needs
		5.1.3.2 The governance structure ensures quality of care, including patient safety, is properly monitored
		5.1.3.3 The governance structure ensures the health establishment's risks are identified and managed
		5.1.3.4 The governance structure ensures the financial sustainability of the health establishment
		5.1.3.5 The governance structure ensures the health establishment's human resources are effectively managed and developed
		5.1.3.6 The governance structure monitors senior management performance and compliance with ethical business practice
5.2 Strategic management	5.2.1 The management structure is appropriate for the health establishment and has the authority to ensure efficient service delivery	5.2.1.1 The health establishment has an appropriate management structure in place and is familiar to all staff
		5.2.1.2 The delegation of authority for the health establishment's manager details limits of authority
		5.2.1.3 Delegations of authority for financial, human resources and other processes are clearly documented and followed

	5.2.2 Strategic plans set key priorities and operational plans show how the targets will be achieved	5.2.2.1 A comprehensive strategic plan is in line with national/provincial or parent company strategic plans
		5.2.2.2 Operational plans are in line with strategic plans so as to meet service delivery objectives
	5.2.3 Budget allocations and staffing ensure services can be delivered as planned	5.2.3.1 The annual budget is developed as part of the strategic and operational plan to meet agreed priorities using available resources and capacity
		5.2.3.2 Efficiencies and savings are identified and included in the budget
		5.2.3.3 The human resource allocation plan ensures sufficient staff to meet the health establishment's agreed service levels
	5.2.4 Senior managers monitor and evaluate operational plans to ensure the health establishment's targets are met	5.2.4.1 The health establishment's performance is monitored against key objectives in the operational plans
		5.2.4.2 Internal and external financial audits are carried out annually
5.3 Risk management	5.3.1 Risks are regularly analysed and controlled	5.3.1.1 Risks are actively monitored and managed to minimise or eliminate risk where possible
	5.3.2 Medico-legal incidents and cases are properly managed	5.3.2.1 The establishment has appropriate insurance or other cover for medico-legal incidents and damages claims
5.4 Quality improvement	5.4.1 A quality improvement system is in place and monitored for effectiveness	5.4.1.1 A committee guides and coordinates the quality assurance system
		5.4.1.2 Actions are taken on all quality improvement needs and their implementation is monitored
5.5 Effective leadership	5.5.1 Senior managers make sure that plans are	5.5.1.1 Key senior positions are filled by persons with appropriate competencies, qualifications, experience and knowledge
		5.5.1.2 Each senior manager's responsibilities are defined in a current job description

	implemented, and targets are met	5.5.1.3 Performance management of senior managers is in line with strategic and operational plans
	5.5.2 Senior managers' actions demonstrate their leadership and values	5.5.2.1 Senior managers provide positive role models
		5.5.2.2 Leadership development is actively supported at all levels
5.6 Communications and public relations	5.6.1 Staff are involved in improving services and are kept informed about these efforts	5.6.1.1 A communication strategy ensures staff are informed about all relevant issues within and affecting the health establishment
		5.6.1.2 Staff actively participate in decisions about quality in the health establishment
	5.6.2 Public relations staff provide the public and the media with accurate and appropriate information when needed	5.6.2.1 A communication strategy ensures that the public are informed about all relevant issues within and affecting the health establishment
		5.6.2.2 A member of staff is responsible for performing the functions of communication officer
		5.6.2.3 Information about the health establishment, health-related issues, public concerns and queries is released in a timely and appropriate manner
		5.6.2.4 All publicity and information material include up-to-date contact details and the customer call-centre number
		5.6.2.5 The health establishment does not divulge confidential information or patient identifiable data without prior consent (as per legislation)
		5.6.2.6 Access to information conforms to Section 51 of the Promotion of Access to Information Act 2 of 2000 through an accessible PROATIA Manual

Appendix D2: Domain 6 of the National Core Standards

Table 28: National Core Standards Domain 6 with sub-domains, standards and criteria

Sub-domain	Standard	Criteria
6.1 Human resource management and development	6.1.1 Staff is managed efficiently and fairly, and recruitment, administrative and registration processes ensure safe and effective service delivery	6.1.1.1 The health establishment has the most up to date human resource policies and relevant legislation
		6.1.1.2 An approved staffing plan is in place, in accordance with occupancy rates, utilisation rates and patient profiles
		6.1.1.3 The health establishment follows staff recruitment and selection procedures
		6.1.1.4 Health professionals are registered and provide clinical services consistent with their qualifications
		6.1.1.5 Staff absenteeism, turnover and vacancy rates are monitored to identify and address trends
		6.1.1.6 A human resource retention strategy ensures adequate and motivated staff
	6.1.2 Staff performance is regularly reviewed against job descriptions or performance plans to ensure these are achieved	6.1.2.1 Staff responsibilities are defined in current job descriptions
		6.1.2.2 Staff are involved in periodic reviews to appraise their performance and set objectives and targets
	6.1.3 Labour Relations policies are supported by sound employee relations to protect employee and employer rights	6.1.3.1 Labour Relations policies recognise employees' and employers' rights and are applied fairly and consistently
	6.1.4 A comprehensive programme for staff training and continuing professional	6.1.4.1 Staff are briefed on the health establishment and their specific responsibilities
		6.1.4.2 Staff receive ongoing in-service education according to their roles and responsibilities

	development is in place	
6.2 Staff welfare and employee wellness	6.2.1 Staff health and welfare is actively promoted	6.2.1.1 There is a zero-tolerance policy on violence and abuse towards staff and action is taken to support this
		6.2.1.2 Staff health and healthy lifestyle initiatives are promoted and supported
	6.2.2 Staff are protected from workplace hazards through effective occupational health and safety systems	6.2.2.1 Responsibilities under the Occupational Health and Safety Act are in writing
		6.2.2.2 An active Health and Safety Committee ensures a safe working environment
		6.2.2.3 A medical surveillance plan is in place for at-risk staff, based on health risk assessments
		6.2.2.4 Measures are in place to minimise critical occupationally acquired injuries and diseases
6.3 Financial management	6.3.1 Expenditure is managed and monitored to ensure efficiency within legal frameworks	6.3.1.1 All financial processes are in line with the Public Finance Management Act or Generally Accepted Accounting Principles
		6.3.1.2 Procedures ensure that expenditure meets defined service needs for staff and other inputs
		6.3.1.3 Analysis of actual spend against budgets ensures continuity of services and prompt payment of suppliers
6.4 Supply chain and asset management	6.4.1 All tendering and purchasing is transparent and fair and reflects planned needs and budgets	6.4.1.1 Asset and equipment needs are identified in the annual plans and budgets and incorporated into procurement plans
		6.4.1.2 Transparent policies and procedures limit influences on purchasing decisions are enforced through transparency and segregation of duties
		6.4.1.3 All local tendering and contracting processes comply with relevant legislation
	6.4.2 Assets are properly registered, managed and controlled to maximise use and reduce losses	6.4.2.1 A complete, accurate and updated asset register is available
		6.4.2.2 Maintenance and disposal of assets is managed effectively and efficiently
		6.4.2.3 Assets are monitored, and variances addressed
		6.4.2.4 Risk of loss or theft is identified and managed
	6.4.3 Contracts for the supply of goods	6.4.3.1 All contract management processes comply with relevant legislation or policies

	and services are managed and monitored to ensure performance, quality and value-for-money	6.4.3.2 Management proactively monitors contracts to ensure compliance by all parties
		6.4.3.3 Prompt action is taken should contractors fail to deliver against their service level agreements
	6.4.4 Stock and suppliers are efficiently managed to ensure supplies meet planned service needs at all times	6.4.4.1 Designated suppliers adhere to contractual obligations
		6.4.4.2 An up-dated computerised or manual (stock cards) inventory management system for supplies is in place
6.5 Transport and fleet management	6.5.1 The availability and safety of vehicles are assured through proper maintenance, licensing of drivers and monitoring of utilisation	6.5.1.1 All vehicles owned or used by the health establishment are licensed and maintained
		6.5.1.2 The health establishment ensures that all employed or contracted drivers have an appropriate licence.
		6.1.5.3 Transport use is recorded and monitored to prevent misuse of vehicles
6.6 Information management	6.6.1 A health management information system collects, stores and provides data to meet management's needs	6.6.1.1 Staff have adequate IT hardware, skills and support to effectively use the systems provided
		6.6.1.2 Computerised systems are functional and used where available
		6.6.1.3 Contingency plans for system failure or other challenges are available and known to staff and managers
	6.6.2 Management uses information to inform decision-making and planning	6.6.2.1 The health establishment submits clinical, managerial and administrative information as required
		6.6.2.2 Managerial, clinical and administrative information is used to support decision-making and planning
	6.6.3 Confidential information is handled in line with data protection policies and legislation	6.6.3.1 Patient, personnel and other confidential records are archived securely and only accessed by authorised personnel
		6.6.3.2 Procedures for the disposal of confidential waste are followed

6.7 Medical Records	6.7.1 Patient information is accurately and completely recorded according to clinical, legal and ethical requirements	6.7.1.1 Patient records are complete and contain all legal and statutory requirements
		6.7.1.2 Patient's records are managed confidentially
	6.7.2 An efficient system is in place to archive and retrieve medical or patient records	6.7.2.1 Dedicated, trained staff and appropriate systems are in place to manage the record archive
		6.7.2.2 Processes and infrastructure for filing and retrieval of patient files ensure effective and efficient services

Appendix E: Interview Development and Schedule

Research purpose:

Assessment of district health management structures and service delivery processes to identify system inefficiencies and knowledge gaps.

Central research question:

Would better management structures at the district level of the health system enable better resource usage and promote more efficient service delivery at the districts?

Theory Questions:

1. Theory Question One - what is currently done with regards to the improvement of service delivery?
2. Theory Question Two - would a best practice model apply to the South African healthcare system?
3. Theory Question Three - is too much attention being paid to health programme advancement as opposed to correcting the gaps and inefficient in the system?
4. Theory Question Four - how is information regarding the key areas of the theoretical framework transferred down from the government to site level? And how is this same information reported back up to the government?

Semi-Structure Interview Questions

1. What is your background?
2. Describe your role in the district/ region?
3. How do you believe your roles plays in the whole system?
4. What kind of interaction do you have at provincial level?
5. How do you receive feedback from lower levels? Are their control mechanisms in place?
6. Describe the reporting process
7. How do instructions filter down & up between levels?

8. What could be decentralised to the district level and what should remain at other levels?
9. How do health campaigns/ vertical programmes affect and aid the system?
10. Should we be focusing more on the overall health system or vertical programmes?
11. What are your thoughts on the NHI?
12. Do you share best practice between facilities in your region/district?
13. Is there duplication of work in your region/district? *Reference to the Literature diagram paper*

Optional Questions

1. How does your district try to improve service delivery?
2. How are these programmes or initiatives measured with regards to success or failure?
3. Is there any measurement tool in place currently?
4. What characteristics or important areas should be standard in every district?
5. Can you explain how your district promotes health programmes? (HIV/AIDS, TB, etc.)
6. What do you think is the biggest problem within your district? And within the overall health system?
7. Would a systems focus be more beneficial to the improvement of the overall health system?
8. Does information flow freely between the levels of the healthcare system?
9. How are the district financials determined? Are these reviewed each year?
10. What quality tools or programmes have been implemented within your district? Which of these are determined by the Department?
11. How do the districts and sites go about obtaining the reasons they require for daily operations for service delivery?

Please note the optional questions list above were not necessary asked in the interviews because based on responses from the interview questions other probing questions may have been asked to get the interviewee to elaborate further.

Appendix F: Thematic Analysis Tool

Table 29: Thematic Content Analysis for interviews (blank example)

	D1	D2	D3	D4	D5 & D6	D7	D8	D9
Structure defined by legislation								
How it is actually set up								
Constraints (can vs cannot do)								
Inefficiencies								
Policy or tools mentioned								
Vertical vs Horizontal Programmes								

D1 – Admin Function

D2 – PHC Function

D3 – Hospital Service Function

D4 – Facilities Function

D5 – District Leadership Function

D6 – District Leadership Function

D7 – District Leadership Function

D8 – Regional Leadership Function

D9 – Private Function