A review of health care indicators in the South African District Health Information System used for planning, monitoring and evaluation

Submitted to:

NELSON R. MANDELA SCHOOL OF MEDICINE

UNIVERSITY OF KWAZULU-NATAL DURBAN, SOUTH AFRICA

Rakshika Vanmali Bhana

Student no: 892202259

University of KwaZulu-Natal, Durban

Submitted in partial fulfilment of the academic requirements for the degree:

Master of Public Health

SUPERVISOR

Dr Stephen Knight

12 March 2010

ABSTRACT

Introduction

A plethora of health indicators have been added into the District Health Information System (DHIS) since its adoption and implementation as the routine health information for South Africa in 1999. The growing demand for the production and dissemination of routine health information has not been equally matched by improvements in the quality of data. In the health sector the value of monitoring and evaluation is not simply the product of conducting monitoring and evaluation but, rather from discussing and using performance indicators to improve health service delivery.

Aim

The aim of this study was to classify health care indicators in the national health data sets used for planning, monitoring and evaluation and to review the data management practices of personnel at provincial and district level.

Methods

An observational, cross sectional study with a descriptive component was conducted, in 2009, using a finite sample population from district and provincial level across eight provinces. The study participants completed a self-administered questionnaire which was e-mailed to them.

Results

A total of 32 (52%) participants responded to the questionnaire and of this total 21 (65.5%) responses were from district level and 11 (34.4%) from provincial level. The National Indicator Data Set, the key source for primary health care and hospital data, was implemented in 1999 with approximately 60 indicators. In less than 10 years it has grown in size and presently contains 219 performance indicators that are used for monitoring and evaluating service delivery in the public health sector. Whilst both district and provincial level personnel have a high awareness (83%) of the DHIS data sets there is variability in the implementation of these data sets across provinces. The number of indicators collected in the DHIS data sets for management decisions are "enough", however a need was expressed for the collection of community health services data and district

level mortality data. Similarities were noted with other studies that were conducted nationally with respect to data sharing, utilisation and feedback practices. Data utilisation for decision making was perceived by district level personnel to be adequate, whereas provincial level personnel indicated there is inadequate use of data for decision making. Whilst 87.1% of personnel indicated that they produce data analysis reports, 71.9% indicated that they never get feedback on the reports submitted. The top 4 data management constraints include: lack of human resources, lack of trained and competent staff, lack of understanding of data and information collected and the lack of financial and material resources. There was agreement by district and provincial level personnel for the need for additional capacity for data collection at health facility level.

Discussion

The increasing need for accurate, reliable and relevant health information for planning, monitoring and evaluation has highlighted critical areas where systems need to be developed in order to meet the information and reporting requirements of stakeholders at all levels in the health system

Recommendations

An overarching national policy for routine health information systems management needs to be developed which considers the following: emerging national and international reporting requirements, human resources requirements for health information and integration of systems for data collection. In the short-term a review of the National Indicator Data Set needs to be conducted.

DECLARATION

I, Rakshika Vanmali Bhana declare that:

    I. The research reported in this dissertation, except where otherwise indicated, is my original research.

    II. This dissertation has not been submitted for any degree or examination at any other university.

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R. V. Bhana

Department of Public Health Medicine,
Nelson R Mandela School of Medicine
University of KwaZulu-Natal South Africa
12 March 2010

ACKNOWLEDGEMENTS

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
BAS	Basic Accounting System
DHIS	District Health Information System
DIO	District Information Officer
EHS	Environmental Health Services
EMS	Emergency Medical Services
ETR.Net	Electronic Tuberculosis Register
GWM&E	Government-wide Monitoring and Evaluation System
HAST	HIV, AIDS, Sexually Transmitted Infections and. Tuberculosis
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information Systems
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
NDoH	National Department of Health
NHA	National Health Act
NHISA/SA	National Health Information System of South Africa
NIDS	National Indicator Data Set
NMC	National Medical Conditions
NTSG	National Tertiary Services Grant
PERSAL	Personnel and Salary System
PFMA	Public Finance Management Act
PHC	Primary Health Care
PRISM	Performance of Routine Information System Management
QRS	Quarterly Reporting System
WHO	World Health Organization

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CHAPTER 1: INTRODUCTION

1.1   BACKGROUND

Over the past 12 years South Africa has engaged in the process of reforming its health information system. During this period, there has occurred a shift from a centralised, hospital focused health system structure to a decentralised district based system, with a focus on comprehensive primary health care driven by an integrated health and management information system. The District Health Information System (DHIS) software was adapted for national implementation by the National Health Information System of South Africa (NHIS/SA) Committee in 1999 (NDoH 2000). Routine health data in the DHIS is aggregated and processed to provide information required for the management at district, provincial and national levels. The data which is collected, processed, summarised, analysed and used as the indicators for the DHIS are founded on the principles of the information cycle (Heywood and Rohde 2001). The DHIS vision is "to support the development of an excellent and sustainable health information system that enables all health workers to use their own information to improve coverage and quality of health care within these communities" (Heywood and Rhode 2001:12).

The move towards a District Health System and the promulgation of the National Health Act of 2003 prompted managers to re-evaluate health information systems in terms of the reliability and validity of the data and information that is generated, reported and available to be used for planning purposes. Accountability and responsibility for health information lies with the users of health information at each level in the health care system. Consequently, at each level of the health system the users of health information possesses different needs and utilise it in different ways. At the level of client–health worker interaction, patient records form a vital source of clinical information. At health facility level, managers need information on patient and practice profiles, patterns of admissions and discharges, length of hospital stay, use of resources, including medicines and equipment, management and deployment of human resources, budgeting, and financial management. At district level, planners and managers use data and information for developing locally relevant strategies to inform decision making. Information from district level is submitted to provincial level where it is utilised for numerous provincial planning and national reporting requirements. In South Africa information personnel (facility information officers,

district information officers, provincial information officers and information managers) are employed at various levels in the health care system to facilitate and promote data flow from one level to the next and to ensure that it is timeously available, accessible and relevant for use by all stakeholders. The NHIS/SA data flow policy outlines the timeframes for routine monthly data submission from one level to the next until it reaches the National Department of Health (NDoH, undated).

The renewed interest in good quality health information has been spurred by many recent international developments. Specifically, the Millennium Development Goals (MDGs) have drawn attention toward enhanced reporting of health outcomes to monitor necessary progress towards these major international health goals. The demands for data and information emanating from international health priority initiatives focus on the reporting of particular indicators, which do not necessarily translate into building and strengthening information systems that meet both national and international health information needs.

In the context of such global initiatives, reporting requirements for countries have been accelerated. The frequent monitoring of short-term programme outputs (such as improvements in service provision and the number of people using such services) is now required as part of performance-based resource allocation systems (NDoH 2007). Such a rapid escalation in the demand for quality information has exposed major gaps in the availability of information and has resulted in the proliferation of indicators and excessive requirements for reporting. In a review conducted by the World Health Organization (WHO) in 2002, approximately 3500 indicators were listed covering all programme areas. However, for most of these indicators no measurement strategy was proposed and none were produced (Boerma and Stansfield 2007). In South Africa the Quarterly Reporting System (QRS), a National Treasury reporting requirement, implemented in the 2005/2006 financial year, serves as an example of a performance-based disbursement system which relies on quality performance measures and performance indicators to measure productivity and outcomes of a particular programme (Moore 2007). Performance measures and indicators for the compilation of the QRS are derived from the DHIS, as well as various other information systems implemented in the public service, including the Personnel and Salary System (PERSAL) and the Basic Accounting System (BAS).

1.1.1 What is known so far?

The legislative framework in South Africa forms the foundation for mandatory planning and reporting requirements by the national and provincial departments of health. The two key pieces of legislation which relate directly to these reporting requirements are the Public Finance Management Act (PFMA) of 1999 and the National Health Act (NHA) of 2003. The PFMA and related regulations establishes procedures for quarterly reporting to facilitate effective performance monitoring, evaluation and appropriate corrective action. Section 25 (3) of the NHA stipulates that the heads of provincial departments must prepare strategic, medium-term health and human resource plans annually for the exercise of powers in relation to the performance of duties and the provision of services in the province by the that provincial department. Additionally, section 21(5) of the NHA stipulates that the Director General must integrate the health plans of the national department and provincial departments annually and submit the integrated health plans to the National Health Council (Republic of South Africa 2003).

Allowing for the above legislative context, planning, monitoring and evaluation of primary health care services is dependent on various types and sources of data, including routine monthly data, population-based data, sentinel and surveillance data and survey data. Routine monthly data collected at facility level through the DHIS forms the basic source of planning information for health managers. The DHIS, which has been institutionalised within the Department of Health over the last 10 years, remains a critical data and indicator source for the compilation of the various legislated reporting requirements. It collects routine aggregated data from all public health facilities to facilitate the expansion of health care coverage and improvements in the quality of health care services provided to the particular populations served. Aligned to the principle of providing a comprehensive primary health care information system is the development of an essential data set from all vertically managed primary health care (PHC) programmes which aim to monitor health services in an integrated manner (Shaw 2005).

In early 1999 the National Department of Health identified a minimum data set, most of which were used to calculate specific indicators. The particular list has been subject to considerable development and revision from 2002 to 2005 and is now termed the National Indicator Data Set (NIDS). The NIDS exists as "unique in sub-Saharan Africa as it contains a list of approximately

200 indicators, with the underlying 'raw' data elements required to calculate the specified indicators. Approximately 140 of these indicators in the NIDS are relevant to PHC" (Rohde *et al.* 2008:196). Additionally, the NIDS is regarded as an essential data / indicator set, complemented by different data sources, including sentinel and disease surveillance systems, Electronic Medical Record systems, as well as data collected through surveys.

Since the adoption and implementation of the DHIS as the routine health information system for the public sector, various other essential data sets have been developed for inclusion in an extended DHIS. These specific databases include the Quarterly Reporting System (QRS), Hospital Revitalisation, National Tertiary Services Grant (NTSG), Emergency Medical Services (EMS), and Environmental Health Services (EHS) Information Systems. The development of these data sets has been accelerated by the need to integrate programme specific parallel data collection systems in order to improve the collection, accessibility and availability of data and information to meet various provincial and national reporting requirements.

1.1.2   What needs to be known?

The indicators contained in the various data sets of the DHIS need to be initially quantified and thereafter categorised to assess what is available for monitoring and evaluation. A Logic Model[a] will be applied for the categorisation of indicators to provide an accurate reflection of the current status of monitoring and evaluation indicators contained in the DHIS. The study will further describe whether the information collected through the DHIS meets the various reporting requirements and will endeavour to obtain perceptions of information personnel on the collection,

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[a] In its simplest form, the logic model analyzes work into four categories or steps: inputs, activities, outputs, and outcomes. These represent the logical flow from:

1. inputs (resources such as money, employees, and equipment) to
2. work activities, programs or processes, to
3. the immediate outputs of the work that are delivered to customers, to
4. outcomes or results that are the long-term consequences of delivering outputs.

The basic logic model typically is displayed in a diagram such as this:

INPUTS --> ACTIVITIES OR PROCESSES --> OUTPUTS --> OUTCOMES

http://en.wikipedia.org/wiki/Logic_model

use and reporting of information in the DHIS. The study will highlight some of the challenges experienced by both the collectors of health data and users of health information as well as to identify gaps in the information that is available. Further, the study will make recommendations on which levels in the health system greater support for health information is needed and the crucial priority areas required where management needs to intervene to carry out corrective action.

1.1.3   What is the importance of this study?

A plethora of indicators have been added into the DHIS since its adoption and implementation in 1999. This study will prove valuable as it will provide an overview of the number of monitoring indicators (input, process output) against evaluation indicators (outcomes and impact) in the DHIS. Information Officers, at both district and provincial level, constitute the key personnel responsible for managing data and information contained in the DHIS and are also responsible for ensuring data quality and integrity. The study will provide greater insight on the challenges faced by these Information Offices with respect to data collection, reporting and sharing. The perspective of Programme Managers furthermore will furnish further insight on how data in the DHIS is used for monitoring and evaluation and also identify its inherent limitations.

The recent trend in health monitoring and evaluation is focussed on the performance-based approach which had increased emphasis on both coverage and outcome monitoring. This study will provide useful findings on the indicators contained in the DHIS in accordance with the current move towards a performance-based approach to health care planning, monitoring and evaluation.

1.2   STATEMENT OF THE PROBLEM

South Africa has demonstrated progress in developing a routine health information system and the DHIS has been accepted by the national government to be used for the collection of routine health information. Despite these developments and commitment from government, several challenges have been documented by both the collectors and users of health information.

The use of routine information for planning, monitoring and evaluation will be influenced by the perceptions of those personnel who use the DHIS, as well as managers who are responsible for the reporting of health information. It is also important to obtain a summary of the health indicators

that are being collected in the DHIS and to assess these against the perceptions of information personnel with respect to the amount indicators collected, their availability and relevance.

1.3 PURPOSE OF THE RESEARCH

The purpose of this phased study is to review and classify health care indicators in the national health data sets used for planning, monitoring and evaluation, in order to support effective collection, analysis and use of information by District Health Information Officers and Programme Managers at district and provincial levels in South Africa.

1.4 SPECIFIC OBJECTIVES OF THE RESEARCH

Phase 1 objectives are:

- To identify national data sets in the DHIS required for submission to the National Department of Health by provinces;
- To compile and quantify a list of all indicators from the identified data sets;
- To classify the list of indicators according to inputs, processes, outputs, outcomes and impact indicators; and

Phase 2 objectives are:

- To critically review the existing health information collection and information needs at district and provincial level;
- To assess the capacity of staff to collect health data at district and provincial level;
- To assess the adequacy of current systems for health data collection, storage, analysis and feedback to district and provincial level; and
- To review the health data utilisation and sharing practices and related challenges.

1.5. DEFINITIONS USED IN THE RESEARCH CONTEXT

Data

Raw figures that are collected on a routine basis from health care facilities.

Data element

The main source of information in a data processing system. Any unit of data defined for processing is a data element.

Indicator

Variables used to measure change directly or indirectly and provide evidence that a certain condition exists or certain results have or have not been achieved.

Essential data set

A minimum set of data required for informed decision making. Often referred to as "must know" data.

1.6.   SCOPE OF THE STUDY

The study was conducted in eight provinces in South Africa.

1.7.   ORGANISATION OF THE REPORT

The report consists of the following chapters:

- Chapter 1 forms the introduction and outlines the background to the research, supplies a statement of the problem being addressed and lists the study objectives.
- Chapter 2 presents a literature review on health information systems, with specific emphasis on routine health information collected and its utility in the planning, monitoring and evaluation processes. The purpose of the literature review is to provide the context for the study and additional information to facilitate understanding of the field of health management information systems. In addition, the conceptual frameworks underpinning the methodology for the study are discussed.
- Chapter 3 discusses the methods used in this research project.
- Chapter 4 presents the results of the study.
- Chapter 5 contains the discussion and conclusions based on the research findings.

1.9.   SUMMARY

This introduction to the study outlines the background, statement of the research problem and the aims and objectives of the study which is further detailed in the literature review and methods chapters.

CHAPTER 2: LITERATURE REVIEW

2.1   INTRODUCTION

The literature review presented in this chapter comprises a review of various published articles and documents on the topic of routine health information systems. In this chapter a health information system is defined and an overview of the two conceptual models which form the basis of the methodology for this research study are provided. In addition, the literature review explores studies that have been conducted describing the implementation of the DHIS, as a routine health information system, in an attempt to illustrate how these relate to and compare with this study. It further presents discussion on the practice of data collection and sharing of information for planning, monitoring and evaluation including factors that have affected and impacted on how data and information is utilised in the health system.

2.2   SCOPE OF LITERATURE REVIEW

The literature for the study was obtained through various sources, including from books, journals and web references. Secondary sources of information were obtained through policy documents and publications of the National Department of Health, South Africa.

2.3.   CONCEPTUAL MODELS: THE BASIS OF THE STUDY QUESTION

2.3.1   What is a health information system?

Sauerborn and Lippeveld (2000:3) have defined a health information system "as a set of components and procedures organised with the objectives of generating information that will improve health management decisions at all levels of the health system". Routine data that is generated from a health information system can be defined as "information that is derived at regular intervals of a year or less through mechanisms designed to meet predictable information needs" (RHINO 2001:11).

2.3.2   Information cycle model

The development, strengthening and management of routine health information systems in developing countries has been promoted since the 1990s (Sauerborn and Lippeveld 2000). At the

same time routine health information system models were developed to assist developing countries who were embarking on the roll-out and implementation of these systems. Two models that have been cited in literature include firstly, the Health Information System Component Model by Lippeveld and Sauerborn (2000) and secondly, the Information Cycle Model by Heywood and Rohde (2001). The Information Cycle Model developed by Heywood and Rohde (2001) is specific to the South African context and formed the foundation of the architecture of the DHIS and the underlying premise of this study (Figure 1).
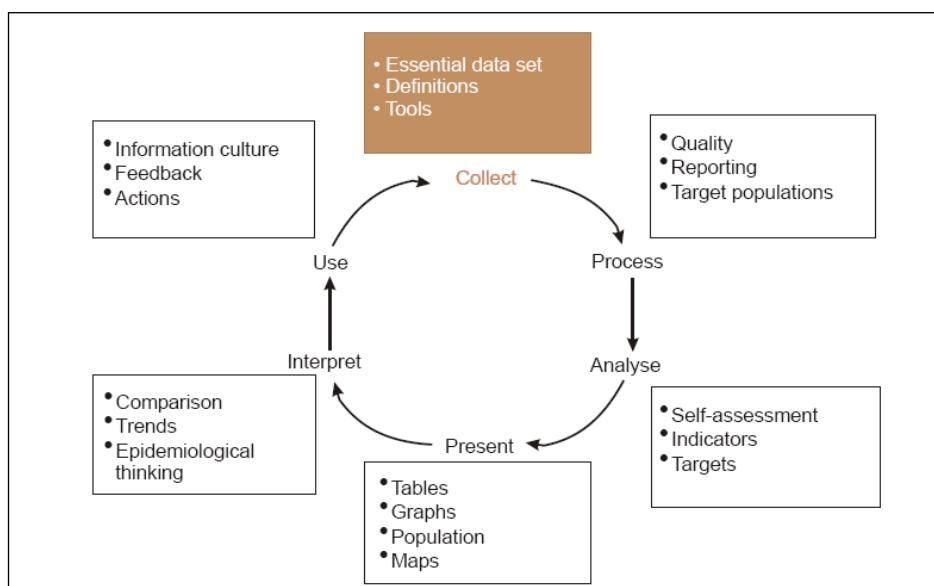
Figure 1: Information Cycle Model

The model systematically describes how data are handled and applied in each of the stages of the cycle, starting with data collection, to ensure the timely generation of relevant and useful information through the DHIS. An understanding and application of the processes involved at each stage of the cycle is integral to strengthening the use of information for evidence-based decision making in health care. This model formed the basis of an evaluation that was conducted on the use of the DHIS at facility level in South Africa (Garrieb *et al.* 2008). According to Godlee *et al.* (2004) there is greater application and support for local information cycles as they possess the potential not only to improve the reliability, relevance and quality of health information, but also to draw health professionals together in the different stages in the creation and dissemination of evidence-based knowledge and information.

The DHIS was adopted for national implementation by the NHIS/SA Committee in 1999. The DHIS operates as a routine, comprehensive, action-led[b] information system and was developed based on the concept of an essential data set, which involves the collection of essential data elements from all primary health care facilities and hospitals in South Africa. Data in the DHIS are collected from health care service providers on a daily basis with the aim of monitoring health care service provision in an integrated way (NDoH 2002; Shaw 2005).

As Stansfield *et al.* (2006:1019) have pointed out, an effective health information system requires an "overarching architecture that defines the data elements, processes, and procedures for collection, collation, presentation and use of information for decision making throughout the health sector". In order to effectively identify and address the health care priorities of a health system, standardisation of information processes are necessary for statistical analysis and comparisons to be made in relation to facilities, districts and provinces.

2.3.3 Indicator Logic Model

The DHIS generates, as part of the analysis phase of the information cycle, a plethora of indicators that are relevant to measuring service delivery performance at all levels in the public health care system. According to Klazinga *et al.* (2001), an indicator can be defined as a measuring and management tool as its utility lies in the extent whereby it measures, for management purposes improvements in health care outcomes. Health indicators have been developed and classified according to what they measure and how they are used in monitoring and evaluating the performance of heath services. Several papers focussing on health indicators have argued that the development of indicators in the 21st century should not be seen as a 'value free' exercise, but should involve a systematic process of consensus that engages all health care levels, where the purpose of the indicator is defined in terms of who wants the indicator, how it is to be used and by whom it is to be used (Klazinga *et al.* 2001; PAHO 2001; Mant 2001).

The Indicator Logic Model (Figure2) adopted by the South African National Treasury defines indicators that are used for monitoring and evaluating performance across the various spheres of

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[b] An action-led information system has been defined by Sandiford (1992) as one where only the data that are required for actionable management decisions are collected.

government (National Treasury 2007). This logic model is also embedded in the Policy Framework for the Government-wide Monitoring and Evaluation System (GWM&E) as one of the three data terrains for monitoring and evaluating programme performance in the country (The Presidency 2007). According to the model, performance indicators are classified into five categories depending on what they aim to measure: inputs, activities[c], outputs, outcomes and impacts. The definition of each category of indicator is detailed in Figure 2.
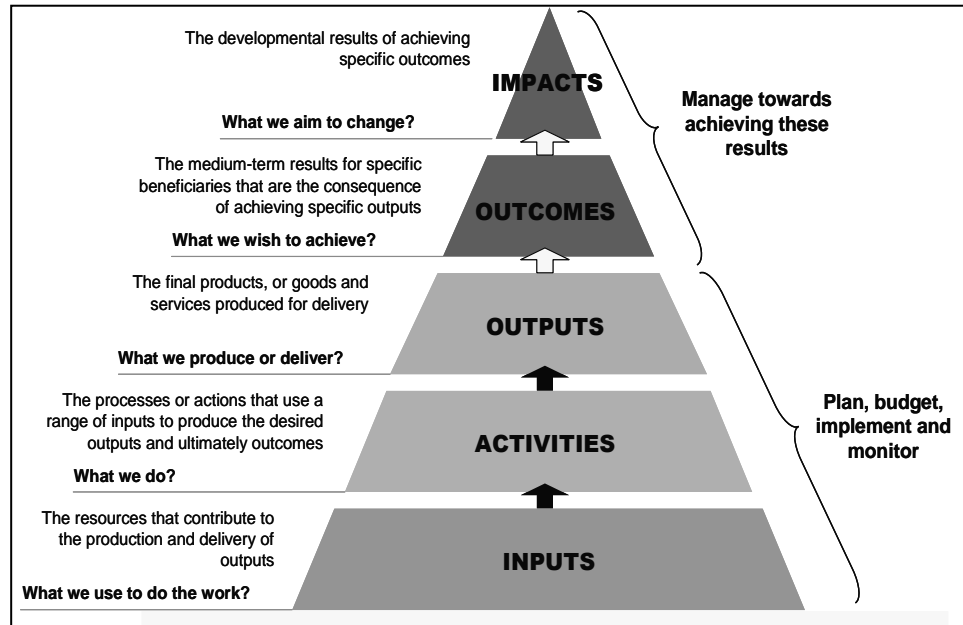
Figure 2: Indicator Logic model

On an international level, the PRISM Framework (Figure 3) by Aqil *et al.* (2009) for measuring the performance of routine health information systems is aligned to the Indicator Logic Model with respect to the health system components measured. According to this framework, "a routine health information system is composed of inputs, processes and outputs or performance which, in turn affect health system performance and consequently lead to better health outcomes" (Aqil *et al.* 2009: 219).

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[c] Also referred to as process.
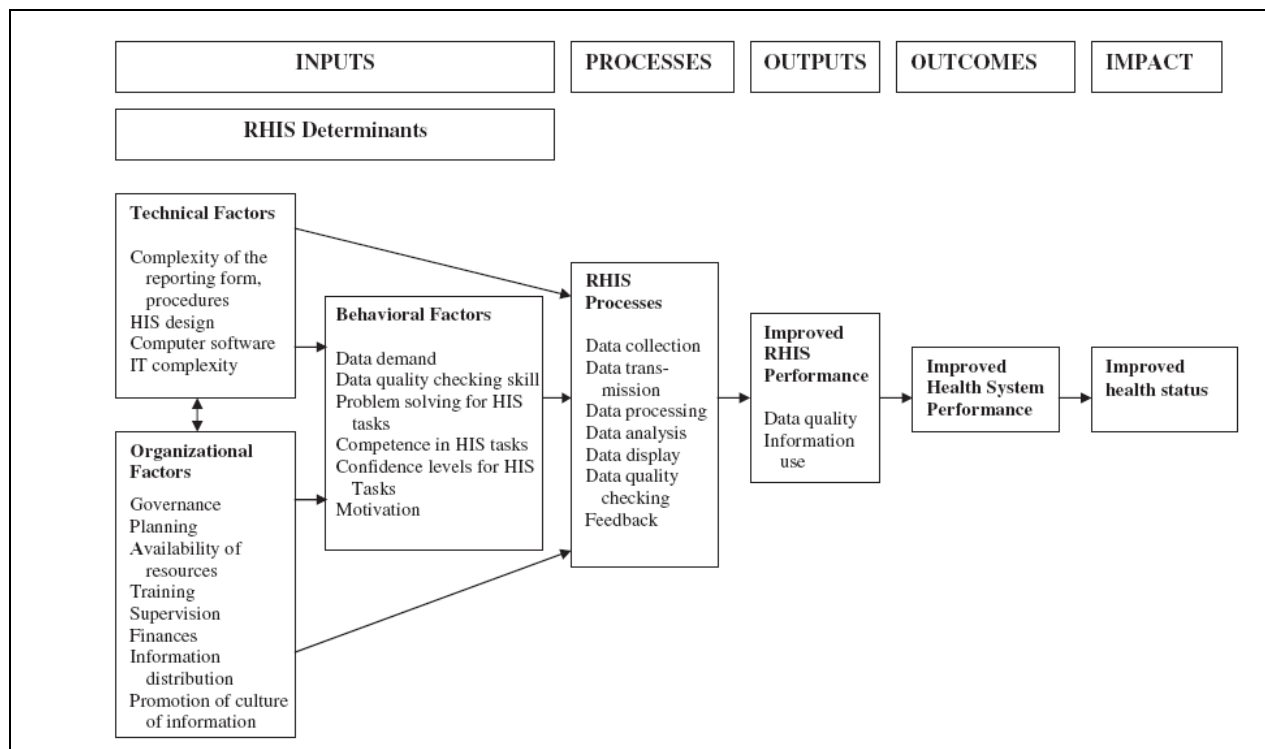
Figure 3: PRISM (Performance of Routine Information System Management) Framework

2.4   PREVIOUS FINDINGS RELEVANT TO THE STUDY

Neils Bohr's statement made in the 1930s (referring to quantum mechanics) that "nothing exists until it is measured" is very appropriate and relevant to the public health domain (AbouZahr and Boerma 2005:578). Maintaining and possessing reliable data on the performance of the health system serves as the only way to plan, monitor and evaluate interventions. Decision making in the public health sector therefore depends on health information systems to generate reliable, accurate and timely data. The goal of a health information system is to provide this information. According to Lippeveld *et al.* (2000), routine health information systems need to respond to the information needs of the decision-makers at all levels in the system. Only a few developing countries, however, retain the ability to generate such information and the failings of health information systems in these countries have been brought into particular focus by the health MDGs (Boerma and Stansfield 2005; Murray 2008).

2.4.1 Routine data collection: The essential data set concept

The demand and supply of good quality data and information are required at all levels of the public health system. This ranges from community to national and global levels. However, the information needs of the users at the various levels of the health system vary in accordance with level-specific priorities. In principle it has been noted that the quantity and volume of data that are collected are greater at service delivery levels of the health care system than at the strategic policy making levels (Heywood and Rohde 2001; AbouZahr *et al.* 2007). Such a factor has the impact of reducing the burden of data collection, handling and reporting as the information flows from the peripheral levels to higher levels in the system. The information pyramid (Figure 4) defines the data needs at the different levels of the health care system (AbouZahr *et al.* 2007).
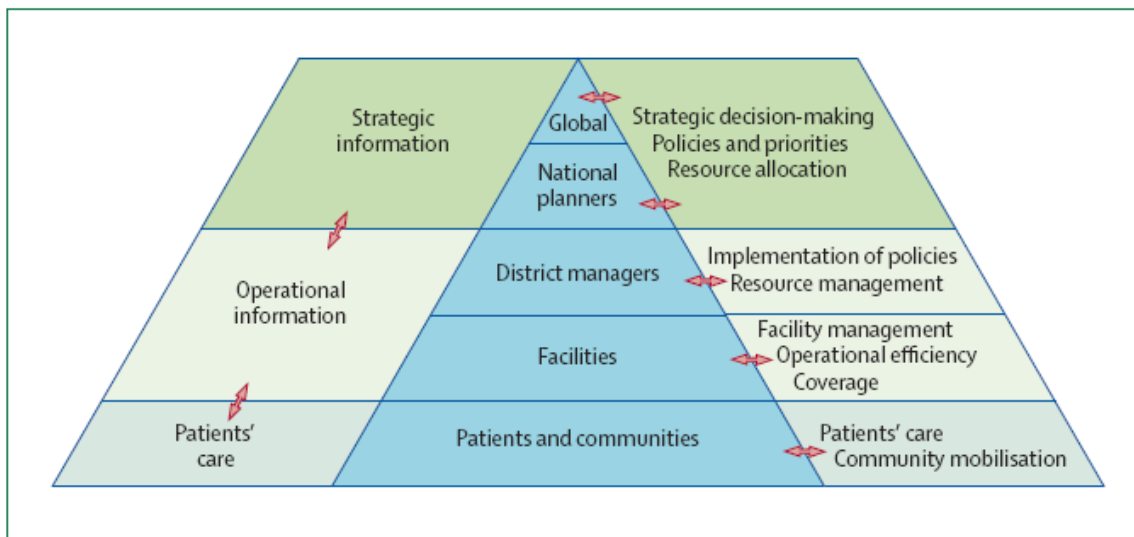
Figure 4: Information Pyramid: Data needs at health care levels

The DHIS has supported the district-based primary health care approach in South Africa over the past 10 years. The implementation of the DHIS as well as the flow of critical information between the various levels of the health system has been facilitated by the development of an essential data set concept (Heywood and Maqaga 1997; Kumalo 2006). In order to rationalise data collection processes at the peripheral levels and to improve standardisation in the collection of data across provinces in South Africa, an essential data set for the routine reporting of primary health care and

hospital indicators[d] was adopted for implementation by the NHISA/SA Committee in 2002 (Shaw 2005; Rohde *et al.* 2008).

The adoption of the NIDS resulted in a shift in focus of *what* and *how* routine data is to be collected. This has, over the years, resulted in the integration of vertical and parallel data collection systems into the DHIS in an attempt to streamline and minimise the duplication of routinely collected data across the various data terrains (Chaulagai *et al.* 2005; Rohde *et al.* 2008). The study conducted by Garrieb *et al.* (2008), however, that cautioned that essential data sets need to be systematically reviewed and updated in order to ensure that information collected is relevant and appropriate for managers who use the information for decision making. The concept of the essential data set is unique to the DHIS and has been implemented by various countries[e] to achieve consensus and harmonisation on a minimum set of indicators to be collected for planning, monitoring and reporting purposes.

Recent studies conducted in Kenya, Malawi and Zanzibar on the implementation of the DHIS revealed that, at the onset, a centrally driven consultative process for developing indicators was necessary to reduce fragmentation and duplication and to improve quality and comparability of health information. (Chaulagai *et al.* 2005; Odhiambo-Otieno and Odero 2005; Lungo and Igira, 2008). Research findings by Lungo and Igra (2008) further revealed that the development of a data dictionary, providing standard definitions for data elements and indicators, remained integral to the ensuring of consistency in the collection and interpretation of health data at all levels.

2.4.2   Data processing: quality and analysis

The development and implementation of essential data sets and standardisation of data collection procedures and practices across regional and district levels does not necessarily guarantee the output of quality indicators for measuring health system performance (AbouZahr *et al.* 2007; Mate *et al.* 2009). Effective monitoring and evaluation of health care outcomes depends on complete,

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[d] The essential data set for reporting on primary health care and hospital indicators is referred to as the National Indicator Data Set (NIDS).

[e] According to the Health Information Systems Programme (http://www.hisp.org) the DHIS has been implemented in the following countries: Botswana, Ethiopia, India, Malawi, Mozambique, Myanmar, Namibia, Nigeria, Norway, Tanzania, Zanzibar, Vietnam and Zambia.

accurate and reliable data submitted timeously between the various reporting levels in the health care system. Despite the availability of data validation and verification mechanisms within the DHIS software to ensure internal data quality and integrity, poor data quality has been consistently reported by users of routine health information in South Africa (Williamson and Stoops 2001; Garrieb *et al.* 2008; Mate *et al.* 2009).

Lippeveld *et al.* (2000) described four dimensions of assessing data quality in relation to routine health information systems: relevance, completeness, timeliness and accuracy. The assessment of data extracted from the DHIS revealed significant failures in meeting one or more of these dimensions (RHINO 2003; Chaulagai *et al.* 2005; Mate *et al*. 2009, Rohde *et al.* 2008).

2.4.3   Information use and feedback

The demand for information has resulted in the emergence of parallel data collections, greater volumes of data required at the national level and subsequent pressure on facility level staff that are at the frontline in their collection of data. The assumption that more data leads to enhanced data utilisation practices, accurate interpretation of data, evidence-based decisions and, ultimately, a better health outcome is not a simple linear relationship (AbouZahr *et al.* 2007).

Almost 10 years into the implementation of routine health information systems in developing countries, the perception remains that data collection is for reporting purposes and the primary aim of a health information system is for the submission of reports (Chaulagai *et al*. 2005). The lack of ownership of data was cited as one of the many constraints in the use and interpretation of data, as such data is perceived as belonging to 'someone else' and, therefore, the responsibility for the use, analysis and interpretation is abdicated (Heywood and Magaqa 1998; Aqil *et al*. 2009). Other constraints that have impacted on the use of data in developing counties include the following factors: the lack of operational knowledge of how information is used in planning; the dearth of skills and competence in the area of analysis and interpretation; lack of access to information by those who are suitably skilled to interpret results; lack of knowledge of what information is available in routine systems; and the shortage of qualified and skilled human resources (Godlee *et al.* 2004; Chaulagai *et al*. 2005; Odhiambo and Odero 2005; Stansfield *et al.* 2006; Loveday *et al.* 2006; Muschel 1999).

Feedback constitutes an integral component of the Information Cycle model. It serves as an important process for identifying problems for resolution and for identifying opportunities for learning as it involves people in a two-way dialogue process. Institutionalising the practice of feedback, however, nonetheless remains a weak, unsustainable process in routine health information systems in many developing countries (Garrieb *et al.* 2008; RHINO 2003). According to Azelmat *et al.* (2001: 43), "creating an information culture is a long-term behavioural intervention" that focuses on strengthening supervision, feedback and support. Behavioural factors have been cited as one of the key determinants of routine health information systems in the PRISM framework by Aqil *et al.* (2009).

2.5   FURTHER RESEARCH NEEDED

There exists a paucity of research that has been conducted on routine health information systems in developing countries. In a recent Medline literature search conducted by Aqil *et al.* (2009), a limited number of papers were found on health information systems research and evaluation in developing countries.

There is growing anecdotal evidence of information focussing specifically on the DHIS. However, few studies have been conducted in South Africa. Findings from two recent studies conducted at facility level in South Africa have provided significant evidence that the data emanating from the DHIS is of poor quality, yet national systems rely on this data for assessing health systems performance (Garrieb *et al*. 2005; Mate *et al.* 2009).

This descriptive study aims to add to the evidence base by focussing on district and provincial levels and seeks to review and assess data management practices of both collectors and users of health information. In addition, this study focuses on the elements of the Information Cycle model which forms the foundation of the DHIS.

2.6   SUMMARY

The literature review introduced relevant models that are applicable to routine health information systems and that have been used in research conducted in the field. The concept of the essential data set has been critically important when reviewing vertical fragmented data collection systems and integrating such data into a unified information system.

Although the national data flow policy for routine health information exists in South Africa, the challenge in meeting the information demands from the various levels has placed a significant burden on those collecting and reporting information.

CHAPTER 3: METHODS

3.1   INTRODUCTION

An observational, descriptive and cross-sectional study design was used to assess the indicators that are reported through the District Health Information System. This study explores the practice of collection, analysis and sharing of information by stakeholders involved in information management and its use at both district and provincial levels. The study was conducted in eight provinces and study participants completed a self-administered questionnaire that was e-mailed to them. The data for phase 1 was analysed using Microsoft Excel 2003. Respondent data for phase two was captured and analysed in EPI INFO version 3.5.1.

3.2   TYPE OF RESEARCH

This study falls within the ambit of health systems research. Health systems research aims to improve the health of people and communities by focusing on the health system as an integral part of the overall process of socio-economic development. By conducting health systems research, relevant and timely information is made available to key stakeholders at all levels of the health system in order to prioritise and inform decision making.

3.3   STUDY DESIGN

An observational, cross sectional study design with a descriptive component was conducted during 2009.

3.4   RESEARCH POPULATION

In phase 1 of the study the indicators in the data sets developed and updated by the National Department of Health since 1999 were used. These indicators are presently being utilised in the DHIS and the data to calculate them collected by all provinces in South Africa.

Phase 2 of the study which involved the assessment of the indicator data sets in the DHIS as well as the data management practices employed in each of the provinces was to have included all nine provinces and fifty two (52) health districts. District Information Officers (one from each health district in the county), Provincial Information Officers (one from each province) and HAST

Provincial Programme Managers (one from each province) formed the research population for the study. The assessment was conducted at both provincial and district levels of the health system. No sampling was undertaken since the study population was finite and of a manageable size to include in its entirety in the study.

3.5   DATA SOURCES

3.5.1   Measurement instruments

The self-administered questionnaire used for collection of data was developed by the principal investigator and the design of the questionnaire was based on the elements of the Information Cycle model. This model was selected as the basis for the questionnaire design, as it is understood by the stakeholders who use the DHIS for the collection and processing of routine data. The Information Cycle model is also extensively covered in the training courses for Information Officers including the "DHIS Foundation Course"[f] as well as in training courses focussing on the "Use of Information for Management".[g]

The variables included in the self administered questionnaire include:

- Demographic and biographical details of respondents;
- Availability of policies and guidelines for information management;
- Perceptions of the quantity of indicators collected in the DHIS data sets;
- Availability of capacity for the collection, storage and analysis of data;
- Additional areas of training required in data management;
- Perceptions of the data sharing and feedback practices;
- Perceptions on the use of information for monitoring and evaluation; and
- Successes and challenges of DHIS data utilisation.

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[f] The course is conducted by the Health Information Systems Program (HISP) and is a beginners level course which aims at building skills for capturing and validating data in the DHIS.

[g] This course is conducted by the Health Systems Trust and HISP and targets programme managers as it aims to build understanding on indicators that are collected in the DHIS for planning, monitoring and evaluation.

3.5.2 Piloting of the measuring instrument

Given that the questionnaire was developed specifically to be used in this study there was a need to pilot the questionnaire to ensure its validity prior to administering it to the study population. The questionnaire was piloted with Health Management Information Systems (HMIS) Facilitators supporting provinces on the use of the DHIS and information for management. Nine HMIS Facilitators, one from each province, formed part of the pilot study that was conducted in January 2009. The pilot study was undertaken to ensure that the questionnaire was not ambiguous, that the correct language and terminology was used for the study population and that the questions were clearly understood. Consistency in the pilot study was maintained with respect to the mode of administering the questionnaire.

Based on the pilot study the final questionnaire was amended as follows:

- The estimated time for completion of the self-administered questionnaire on the Participant Information Sheet was increased.
- Additional questions were added to the background section.
- Questions relating to the rating of data sets in Section 1 were amended to reduce confusion and allow for ease of completion of the questionnaire.
- Additional space was provided for respondents to complete open-ended questions.
- Corrections were made to formatting, styles and grammatical errors that were found.

Appendix 1 includes the final study questionnaire.

3.5.3 Ensuring validity

3.5.3.1 Internal validity

No sampling of the study population was made as it was a finite and reasonable sized homogeneous group of people who were to be assessed. A known limitation associated with postal and e-mail questionnaire completion is the expected low response rate. As a result numerous attempts were made to encourage the overall level of response by sending frequent reminders to the study population. This process is detailed further in 3.5.3.3.

3.5.3.2 External validity

The topic of the study is of interest primarily to the study population and reduces the generalisability of the study to the wider target population. However, in order to obtain a better understanding of the research question and to improve the external validity, the study was conducted nationally. Respondents from eight out of the nine provinces participated in the study. The Western Cape Province was excluded from the study as it utilises SINJANI[h] and not the DHIS as the routine information system.

3.5.3.3 Data collection

Data collection for the study commenced in March 2009 for KwaZulu-Natal, Northern Cape, Gauteng, Free State and Limpopo provinces with data collected from the remainder of the provinces (Eastern Cape, North West and Mpumalanga) between June and August 2009 due to delays in obtaining permission to conduct the study from the provincial heads of the health departments.

The primary method of data collection for the study was by means of a self-administered questionnaire which was e-mailed to respondents. Valid e-mail addresses for the study population were obtained from the provincial Information Directorates in the respective provinces.

Although responses to e-mail questionnaires is known to be poor, given that this was a national study with no allocated budget, e-mailing questionnaires to respondents was deemed as the most feasible and preferred method for data collection. The respondents had the option of either e-mailing or faxing the completed questionnaire back to the principal investigator. Respondents were given two weeks to complete and return the questionnaire. Following this deadline, a first e-mail reminder was sent to non-respondents. In provinces where the response was poor, following the first reminder a second e-mail reminder was sent and this was followed up with a telephone call. In order to improve the overall study response rate e-mail addresses that bounced were

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[h] SINJANI is a provincial web-based information system for capturing hospital and epidemiology data from health facilities with internet / intranet access. Given that the system is web-enabled means that real-time data is available and accessible. Unlike the DHIS which requires data to be exported from one level to the next to make it accessible, the SINJANI allows those with internet access to view and access the data online.

monitored and verified with provinces. Questionnaires were resubmitted to e-mail addresses that bounced. In three provinces, Eastern Cape, KwaZulu-Natal and Limpopo, follow-up was also undertaken directly though the Provincial Information Directorates. The response rate obtained per province for each sample population category is detailed in Chapter 4.

3.5.3.4 Data handling
Data quality assurance:

Respondent data was cross-checked for completeness and consistency. All completed questionnaires were returned electronically, which minimised legibility errors as responses to questions were typed and completed questionnaires were received in Microsoft Word format. Respondent data was captured by the principal investigator and expert advice was taken from a bio-statistician on how to deal with inconsistencies and incomplete data fields.

Data capture, processing and analysis

For phase 1 of the study the indicators from the DHIS data sets were listed in Microsoft Excel 2003 and classified according to the definitions specified in the Indicator Logic model. The EPIINFO statistical programme was used for the collation, processing and analysis of respondent data collected in phase 2. The questionnaire included both open (qualitative data) and closed ended (quantitative data) questions. Closed-ended questions were captured and analysed in EPIINFO. A database of quantitative information was compiled by a process of extraction or distilling of the quantitative data from the respondent questionnaires.

Data dissemination

The research findings emanating from this study will be presented to the National Department of Health, who provided permission to conduct the study. Findings will also be shared with the Provincial Information Directorates in the 8 provinces for wider circulation to relevant personnel at district and facility levels.

3.5.4. Statistical process
3.5.4.1 Descriptive Biostatistics

The results presented in Chapter 4 are aimed at describing the data that was obtained from respondents at district and provincial level. Categorical data is summarised in an attempt to assess and describe the perceptions of the sample population with respect to their data and information management practices.

Data was also summarised and presented graphically and by frequency distribution tables. Responses received from qualitative open-ended questions were listed and summarised.

3.6   ETHICS

3.6.1 Biomedical Research Ethics Committee

3.6.1.1. Ethical review

Ethical approval to conduct the study was obtained by the Biomedical Research Ethics Committee of the College of Health Sciences, University of KwaZulu-Natal. Ethical approval to conduct the study was also given by the following Provincial Directorates:

- Research and Epidemiology, Mpumalanga Department of Health;

- Directorate: Epidemiological Research and Surveillance Management, Eastern Cape Department of Health; and

- Directorate: Policy Planning and Research, North West Department of Health and Social Development.

  (Appendix 2 – University of KwaZulu-Natal and Provincial Ethics Clearance letters).

3.6.1.2. Permission to conduct the survey

The Director General: Health, National Department of Health provided written permission for this study to be conducted. (Appendix 3 – Letter of Permission from the National Department of Health).

3.6.1.3. Confidentiality and Informed Consent

Every attempt was made to ensure that responses received remained confidential. The questionnaires were anonymous; however the principal investigator alone was able to determine the identity of the respondents by comparing other data such as gender, race, district and province. All data received from respondents was securely stored (Appendix 4 – Participant Information Sheet). No written informed consent form was signed by participants.

3.7 SUMMARY

In the methods chapter the type of study conducted, study design and sample population investigated are described. The chapter includes a description of the sources of data as well as the collection and analysis methods employed in this study.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

In this chapter I will summarise the findings of phase 1 and 2 of the study according to the objectives set out in Chapter 1. The results obtained are presented under the following headings:

4.1.1 Summary of indicators in the DHIS data sets according to the Indicator Logic model.

4.1.2 Demographic and biographical characteristics of respondents.

4.1.3 Perceptions of existing health information collection and needs at district and provincial level.

4.1.4 Availability of capacity for the collection, storage and analysis of data at district and provincial level.

4.1.5 Perceptions of the health data sharing and feedback practices.

4.1.6 Successes and challenges of data utilisation for decision making.

4.1.1 Summary of indicators in the DHIS data sets according to the Indicator Logic model

The data sets included in the DHIS were identified by respondents and the health system performance indicators that are included in these data sets were extracted and tabulated in an MS Excel spreadsheet. The Indicator Logic model definitions were applied in the categorisation of indicators with respect to whether they classify as, input, process, output, outcome or impact measures. In order to ensure accuracy in the type of classification of the indicator various sources[i] were cross-checked to validate the definitions of the classification.

A summary of the classification of performance indicators from the following DHIS data sets was conducted (Table 1):

- National Indicator Data Set (NIDS) (contains both PHC and hospital indicators);
- Environmental Health Services (EHS);

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[i] Other sources included the Good Indicators Guide (http://www.inispho.org/files/TheGoodIndicatorsGuideUnderstandinghowtouseandch.pdf) and the Monitoring and Evaluation Handbook for Health Managers by the National Department of Health, South Africa.

- Emergency Medical Services (EMS);

- STI Surveillance;

- Quarterly Reporting System (QRS);

- National Tertiary Services Grant (NTSG); and

- Hospital Revitalisation.

There are a greater number of process and output performance indicators in the various data sets compared to the number of outcome and impact indicators (Table 1). The NIDS was implemented in 1999 with approximately 60 indicators. In less than 10 years it has grown in size and presently contains 219 indicators that are used for monitoring PHC and hospital service delivery.

Table 1: Summary and categorisation of performance indicators in the seven District Health Information System data sets in South Africa, 2009.

Data Set	Count	Performance indicator type (count & percentages)				
		Input	**Process**	**Output**	**Outcome**	**Impact**
National Indicator Data Set	219	6 (2.7%)	63 (28.7%)	105 (47.9%)	40 (18.2%)	5 (2.2%)
Environmental Health Services	38	3 (7.9%)	12 (31.6%)	20 (52.6%)	3 (7.9%)	0 (0.0%)
Emergency Medical Services	26	6 (23.1%)	4 (15.4%)	16 (61.5%)	0 (0.0%)	0 (0.0%)
STI Surveillance	39	-	9 (23.1%)	30 (76.9%)	-	-
Quarterly Reporting System	67	9 (13.4%)	31 (46.3%)	23 (34.3%)	4 (6.0%)	-
National Tertiary Services Grant	19	-	3 (15.8%)	16 (84.2%)	-	-
Hospital Revitalisation	30	13 (43.3%)	15 (50.0%)	2 (6.7%)	-	-

4.1.2 Demographic and biographical characteristics of respondents

The self-administered questionnaire was e-mailed to 62 of the study population by e-mail in eight provinces and 32 (52%) respondents returned the questionnaire via e-mail. Of the total responses (n=32) from district and provincial level in each province, 21 (66%) responses were received from district level and 11 (34%) from provincial level (Table 2).

Table 2: Number of respondents to questionnaire from district and provincial level in each province, District Health Information System study, South Africa, 2009.

Province	Number of health districts	District level responses received	Provincial level responses received	
		District Information Officer	Provincial Information Officer	Provincial Programme Manager
EC	7	4	1	1
FS	5	2	-	-
GP	6	2	1	1
KZN	11	6	1	1
LP	5	2	1	-
MP	3	2	1	1
NC	5	2	1	-
NW	4	1	1	-
All responses & % of total		21 (45.6%)	7	4 (68.7%)
Total sample population	46	46	8	8

Most of the respondents were female (87%; 28/32), between the ages of 35 to 50 years (47%, 15/32) and have been in their current positions for less than 5 years (56%; 18/32) (Table 3). More than half of the respondents from district level (52%, 11/21) and provincial level (55%, 6/11) were African. Most district level respondents (62%; 13/32) had a diploma as the highest level of education whereas at provincial level 82% (9/11) of respondents had been awarded a degree as the highest level of education. One respondent at district level only had a matric. Respondents reported being computer literate and rated themselves as either 'good' (47%; 15/32) 'excellent' (50%; 16/32) or average (3.1%, 1/32). At provincial level the majority of respondents (82%; 9/11) have access to both a desktop and a laptop with no respondents reporting having access to only a desktop.

Table 3: Respondent demographic characteristics (count and percentage), district and provincial level, District Health Information System study, South Africa, 2009

	District: N = 21	*Province: N = 11*	*Total: N = 32*
Gender			
Male	4 (19.0%)	0 (0.0%)	4 (12.5%)
Female	17 (81.0%)	11 (100%)	28 (87.5%)
Age			
< 35	2 (9.5%)	2 (18.2%)	4 (12.5%)
35-50	11 (52.3%)	4 (36.4%)	15 (46.9%)
> 50	8 (38.1%)	5 (45.4%)	13 (40.6%)
Years in current position			
< 5	11 (52.3%)	7 (63.6%)	18 (56.2%)
5-10	8 (38.1%)	3 (27.3%)	11 (34.4%)
> 10	2 (9.5%)	1 (9.1%)	3 (9.4%)
Highest Education			
Matric	1 (4.8%)	0 (0.0%)	1 (3.1%)
Diploma	13 (61.9%)	1 (9.1%)	14 (43.8%)
Degree	6 (28.6%)	9 (81.8%)	15 (46.9%)
Post-graduate	1 (4.8%)	1 (9.1%)	2 (6.3%)
Computer Literacy			
Poor	0 (0.0%)	0 (0.0%)	0 (0.0%)
Average	0 (0.0%)	1 (9.1%)	1 (3.1%)
Good	11 (52.4%)	4 (36.4%)	15 (46.9%)
Excellent	10 (47.6%)	6 (54.5%)	16 (50.0%)
Technology Available			
Desktop	3 (14.3%)	0 (0.0%)	3 (9.4%)
Laptop	9 (42.9%)	2 (18.2%)	11 (34.4%)
Both	9 (42.9%)	9 (81.8%)	18 (56.3%)

Overall, 44% (14/32) of respondents indicated that data management constitutes 75 to 100% of their work time and only 6.3% (2/32) spend between 0 to 25% of their work time on data management (Figure 5).
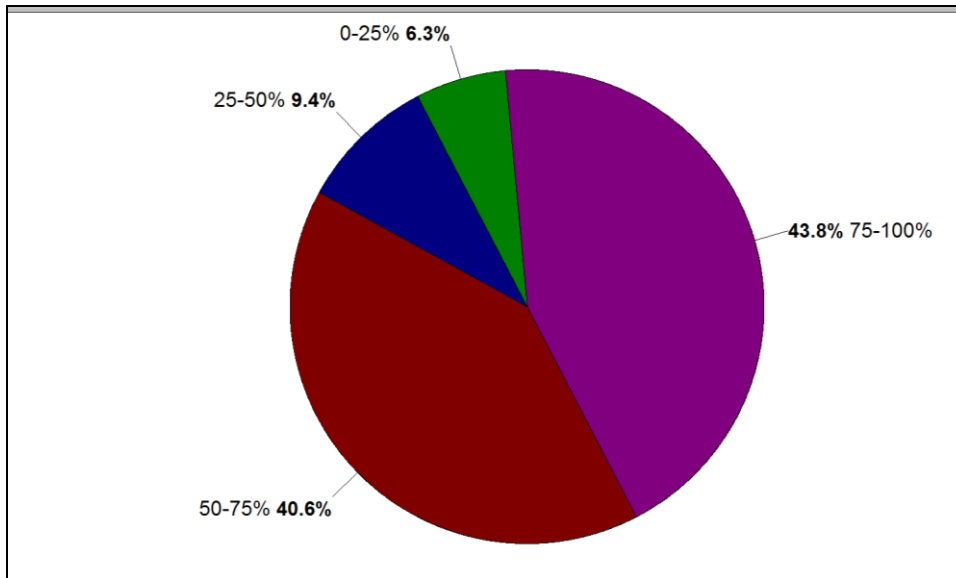
Figure 5: Percentage of work time involved in data management reported by respondents, District Health Information Systems study, South Africa, 2009

With respect to the specific areas of data management that district and provincial level respondents are involved in, similarities were noted in the following areas of data management: collation and analysis (95% and 91%), reporting and feedback (95% and 91%) and information use for decision making (90% and 91%) (Figure 6). However, the process of storage and transmission is mainly a district level data management function with 95% (20/21) district respondents indicating being involved in these areas.
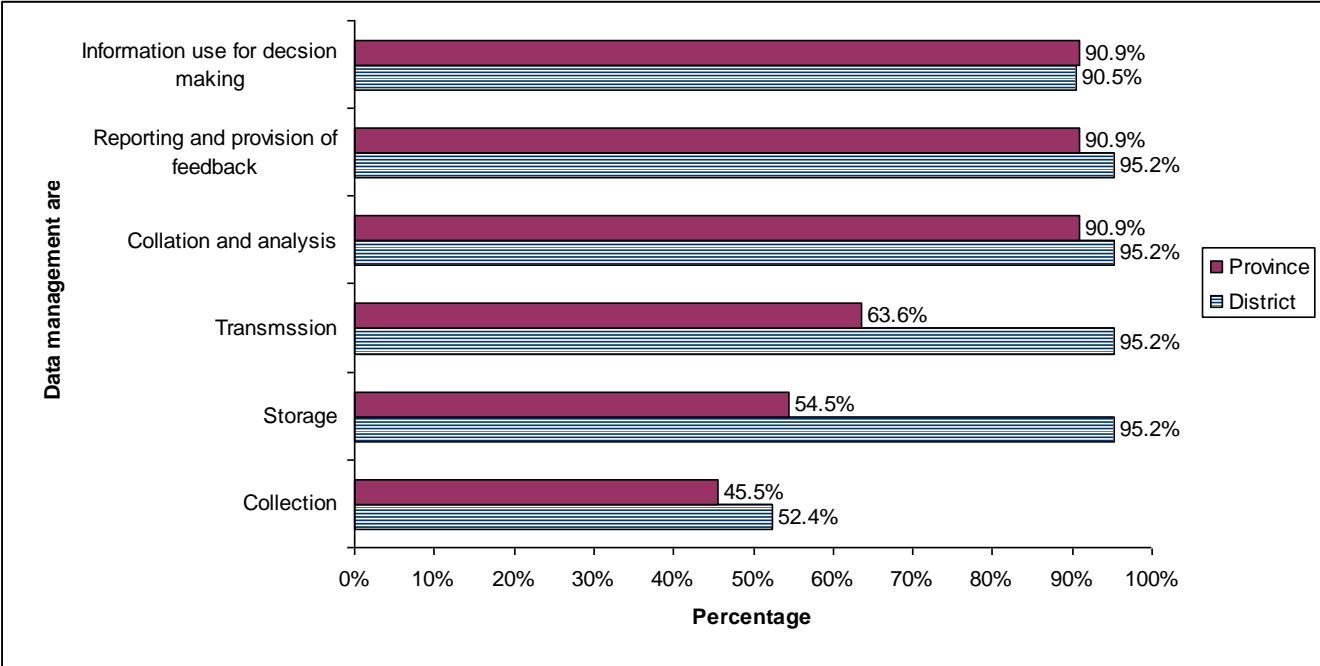
Figure 6: Responses by district and provincial level respondents in relation to the areas of data management that they are involved in, District Health Information Systems study, South Africa, 2009

4.1.3 Perceptions of existing health information collection and needs at district and provincial level

In this section the first objective of Phase 2 of the study are answered, namely to review the existing health information collection and needs at district and provincial level with respect to the perceptions on:

- The need for the collection and utilisation of data;
- The availability of policies and guidelines for use in data and information management;
- Awareness, availability and relevance of the data sets in the DHIS;
- Number of indicators collected in the DHIS for management decisions; and
- Information not presently collected.

- **The need for the collection of health information**

In the literature review it was noted that pressure is being placed on both the collectors and users of health information due to increasing reporting requirements from a national and international level. Respondents were asked why they think that there is a need for the collection and utilisation of data. A thematic analysis of the responses received revealed the following seven themes with respect to the need for data collection. Direct responses from respondents appear as quotes.

1. **Monitoring and evaluation of health systems performance**

   Monitoring and evaluation is an important component in the development and management of health programmes. It forms an essential step in the quality improvement cycle when assessing the performance of projects against meeting service delivery standards.

   "Information is the engine room for health service provision"

2. **Baseline data for setting of goals and objectives for planning processes**

   Baseline data provides a point of reference when determining whether programme targets and objectives are achieved. Indicators need to be measured against a baseline or target.

3. **Resource allocation**

   Data is essential for informing both human and financial resource allocation, intervention planning and capacity development.

4. **Health worker performance evaluation**

   The performance evaluation system for health care workers is linked to service delivery outputs. The data that is collected informs these outputs.

   "If you are not measuring it you are not managing it"

5. **Trend analysis**

   Using data for trend analysis allows for the identification of gaps in service delivery and underperforming areas can be prioritised for intervention. Trend data allows for the comparisons to be made over time and across health care facilities.

6. Inform disease profile and health status of community

Without data the health care needs of the community would not be able to be established. Coverage indicators are extremely useful in providing information on disease profiles and the extent to which diseases are prevalent in the communities accessing health care.

7. Risk evaluation and early warning system

Data signals disease outbreaks and allows health planners to implement long term interventions to reduce the risk of disease in communities.

- **The availability of policies and guidelines for use in data and information management**

The need for national policies and guidelines has been documented in the literature as being critical to ensure wide scale standardisation in data management practices. The availability of policies and guidelines for data management was assessed to determine whether all provinces, that were included in this study, have such policies or guidelines in place. Of the total respondents (n=32) 62% indicated that provincial data management policies and guidelines are available to them.

An analysis of the provincial breakdown of the responses with respect to whether policies for data management are available shows that 100% respondents in Eastern Cape, Gauteng, Limpopo and North West indicated that provincial policies are available to them (Table 4). However, respondents in Northern Cape (100%, 3/3) and KwaZulu-Natal (87%; 7/8) indicated that they do not have policies available to them. There is variability in responses from Free State and Mpumalanga with some respondents indicating that policies are available and others indicating that polices are not available to them.

Table 4: Awareness by respondents of the availability of provincial policies and guidelines for data and information management in provinces, District Health Information Systems study, South Africa, 2009

	Province(count and percentage)							
	Eastern Cape	**Free State**	**Gauteng**	**KwaZulu Natal**	**Limpopo**	**Mpumalanga**	**Northern Cape**	**North West**
Yes	6	1	4	1	4	2	0	2
	(100.0%)	(50.0%)	(100%)	(12.5%)	(100.0%)	(66.7%)	(0%)	(100.0%)
No	0	1	0	7	0	1	3	0
	(0.0%)	(50.0%)	(0.0%)	(87.5%)	(0.0%)	(33.3%)	(100.0%)	(0.0%)

- **Awareness, availability and relevance of the data sets in the DHIS**

The DHIS data sets that are included in Phase 1 of the study formed part of Phase 2 of the study in order to assess whether respondents are aware of the data sets in the DHIS, which data sets are available to them and which are relevant to their area/s of work.

One hundred percent (32/32) of respondents indicated an awareness of the PHC, hospital and STI surveillance data sets (Figure 7). Similarly, the same number of respondents from district and provincial level (95% and 91%) indicated awareness of the Emergency Medical Services and Quarterly Reporting System data sets. District level respondents (38%, 8/21) indicated a higher level of awareness of the Hospital Revitalisation data set whereas provincial level respondents (73%, 8/11) indicated a higher level of awareness of the National Tertiary Services Grant data set. If we assess the mean value of all eight data sets there is an equal awareness (83%) by both district and provincial level respondents of the DHIS data sets (Figure 7).
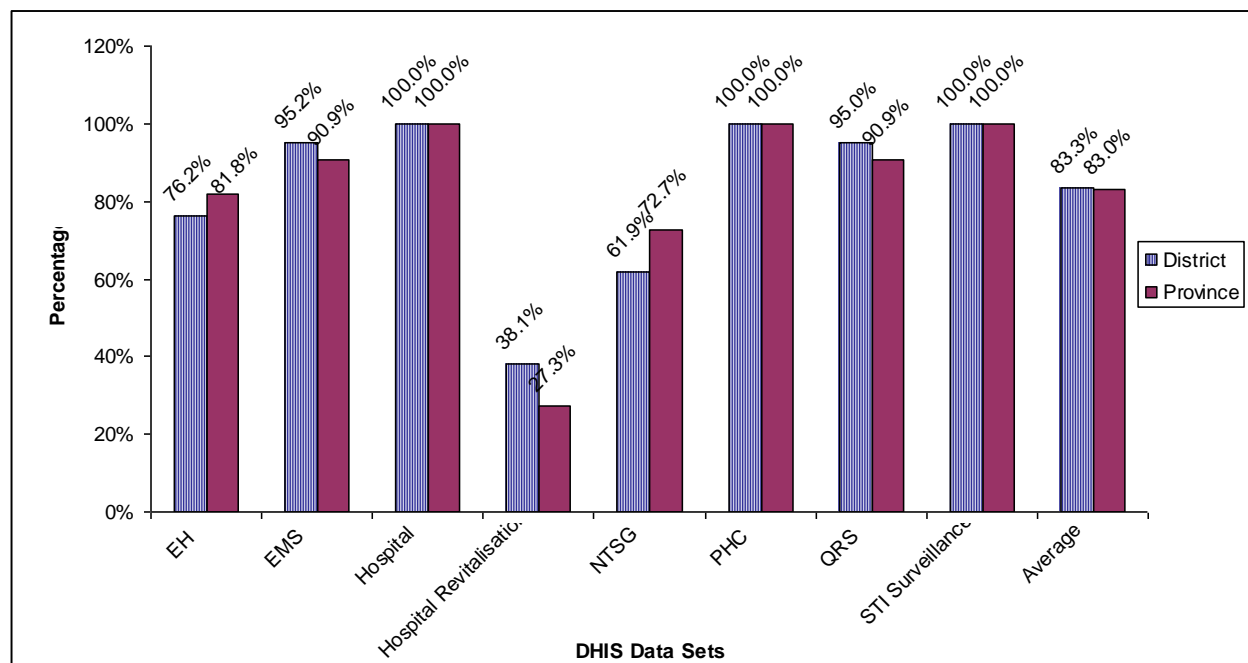
Figure 7: Responses by district and provincial level respondents in relation to the awareness of the data sets in the District Health Information System, South Africa, 2009

At district level data received from health facilities is captured in the various data sets in the DHIS and transmitted to provincial level for submission to national level. The District Information Officer (DIO) is responsible for ensuring that data is timeously submitted according to both provincial and national data flow timeframes. The completeness of submitted data depends on the availability of data in the DHIS. Given that the DIO is responsible for maintaining the DHIS and ensuring that it is updated, a district level assessment was conducted with respect to which data sets is presently available to DIOs and which data sets are relevant to their area of work.

All (100%, 21/21) district level respondents i.e. DIOs have the hospital, PHC and STI surveillance data sets available to them and all DIOs indicated that the hospital and PHC STI data sets are relevant to their work (Figure 8). It is of concern that the other data sets are not available to all DIOs and this has implications for the implementation of these data sets as well as the reporting of data contained in these data sets. The National Tertiary Services Grant and Quarterly Reporting System data sets are available to 43% (9/21) and 62% (13/21) DIOs respectively, however the

same data sets were reported to be more relevant (52% and 81% respectively) to the DIOs area of work.
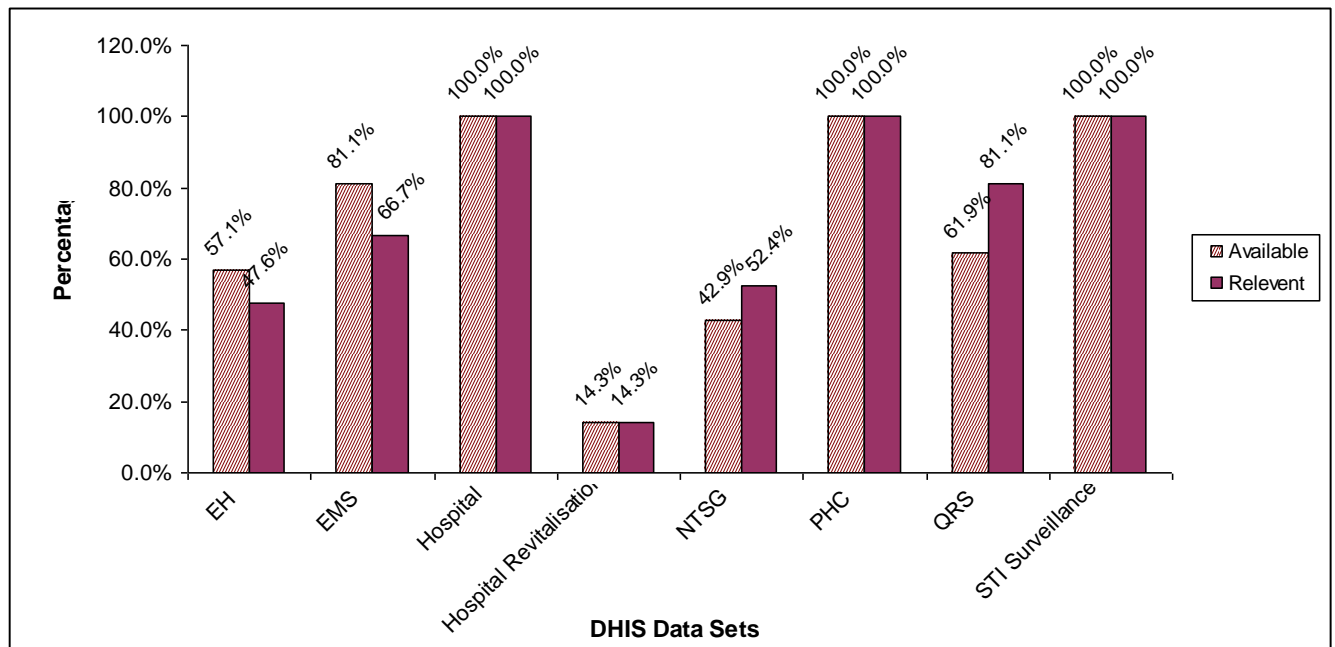
Figure 8: Responses by district level respondents in relation to data sets available in the District Health Information System and data sets are relevant to their area of work, South Africa, 2009

- **Number of indicators collected in the DHIS for management decisions**

Respondents were asked to rate the amount of indicators collected in the eight DHIS data sets for management decisions by applying the following rating scale:

- o 1= not enough;
- o 2= just about enough;
- o 3= enough; and
- o 4= more than enough.

A district and provincial level analysis of results revealed a median rating value of 3 for all data sets except for the PHC data set which yielded a median rating value of 4.

- **What information is presently not collected**

The open-ended question in the questionnaire which required respondents to indicate what information is presently not being collected is summarised for the various respondent categories (Table 5).

Table 5: Expressed needs for additional information that is not being collected by respondent categories at district and provincial level, District Health Information System study, South Africa, 2009

Respondent category	*Additional information collection needs*
District Information Officer	- Accurate data on the causes of death in the district - Human resource data - Notifiable medical conditions - Community health worker data - Community based organisations - Environmental health - Chronic care data - Psychiatric care - ART regimen specific data - Circumcision data - HIV sero-prevalence data for district, sub-district and facility levels - Telemedicine data on disease profiles
Provincial Information Officer	- Social Services data specifically in relation to the different disabilities - Community and home-based care services
Provincial Programme Manager	- Private sector data - Non-financial data - Quality assurance indicators for the assessment of services offered - Mortality data from the Department of Home Affairs in order to provide a more accurate disease profile of the district and province

4.1.4 Availability of capacity for collection, storage and analysis of data at district and provincial levels

In this section the focus is on the second and third objectives of Phase 2 of the study which assesses capacity issues with respect to data collection, storage and analysis. There is growing

anecdotal evidence, by those that are involved in strengthening health information systems at the various levels in the health system, for the need for increased capacity for data management. Closed questions were asked to respondents to assess whether such a need exists in the country with respect to data collection, storage and analysis.

Respondents were asked to indicate whether they strongly agree, agree, disagree or strongly disagree with respect to whether additional persons are needed for data collection, storage and analysis. A cross tabulation of the results for each question asked is presented by respondent level (Table 6).

At both district and provincial level respondents indicated strong agreement for the need or for additional persons to be involved in data collection i.e. 71% (15/21)) and 64% (7/11) respectively. There was however a difference in district and provincial level responses in relation to the need for additional persons to be involved in data storage. Whilst there was a higher level of agreement (67%, 14/21) by district level respondents for the need for additional persons to be involved in data storage, 45% (5/11) of respondents at provincial level disagreed that such a need exists. With respect to the need for additional persons to be involved in data analysis fewer (24%, 5/21) district level respondents indicated disagreement. Overall there was agreement by both district and provincial level respondent for the need to additional persons to be involved in data analysis (Table 6).

Table 6: District and provincial level respondent's perceptions on the need for additional persons to be involved in the collection, storage and analysis of data, District Health Information System study, South Africa, 2009

Respondent level		Need for additional persons to be involved in data collection No. (%)	Need for additional persons to be involved in data storage No. (%)	Need for additional persons to be involved in data analysis No. (%)
District (n=21)	Strongly agree	15 (71.4%)	5 (23.8%)	7 (33.3%)
	Agree	6 (28.6%)	14 (66.7%)	9 (42.9%)
	Disagree	-	2 (9.5%)	5 (23.8%)
	Strongly disagree	-	-	-
TOTAL		21 (100.0%)	21 (100.0%)	21 (100.0%)
Province (n=11)	Strongly agree	7 (63.6%)	2 (18.2%)	2 (18.2%)
	Agree	3 (27.3%)	3 (27.3%)	4 (36.4%)
	Disagree	-	5 (45.5%)	4 (36.4%)
	Strongly disagree	1 (9.1%)	1 (9.1%)	1 (9.1%)
TOTAL		11 (100.0%)	11 (100.0%)	11 (100.0%)

To gain further information on the need for additional capacity for data and information management, respondents were asked about their perceptions with respect to the health system level at which they felt additional capacity for data collection and analysis is needed. The majority of district (76%, 16/21) and provincial (91%, 10/11) respondents indicated that additional persons for data collection are needed at facility level (Figure 9). Some of the reasons provided by respondents for indicating the need for data collection at facility level include:

- Data Capturers that are presently employed at facility level are on an internship and this does not provide a long term solution for increasing information management capacity at this level.
- There are no dedicated information personnel at facility level and as a result data collection at this level becomes a function and responsibility of the Facility Manager.
- Information management at the facility level is critical for good data collection, entry, verification and collation to occur.

- Strengthening information systems at the source, including where data is collected daily will facilitate the improved collection of quality data as data moves from one level to the next.
- The lack of permanent information officer posts in a facility places added pressure on the Facility Manager and compromises patient care at this level.
- The electronic collection of quality data from hospitals and other health facilities is essential.
- Paper-based data collection is time consuming and this should be the responsibility of a specific and dedicated, skilled person at facility level.
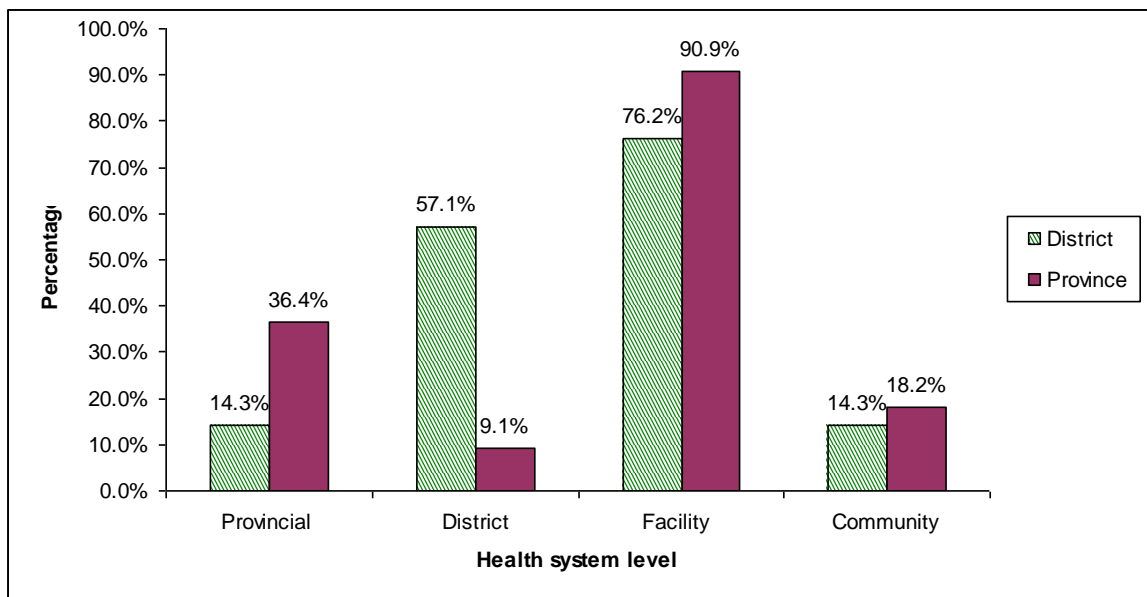
Figure 9: District and provincial level respondent's perceptions of the level at which additional persons are needed for data collection, District Health Information System study South Africa, 2009

The lack of and poor analysis, presentation and use of data has been documented in the literature as one of the key reasons for health professionals to loose confidence in the data. In addition, the need for greater skills competence in the area of data analysis has been documented as one of the ways to improve data quality. Whilst slightly more than half district level respondents (57%, 12/21) indicated that there is a need for additional persons to be involved in data analysis at district

level, the same proportion of district respondents (38%, 8/21) indicated this need at provincial and facility level (Figure 10). Interestingly, the same proportion of provincial respondents (36%, 4/11) indicated that the need exists for data analysis capacity at provincial, district and facility levels.
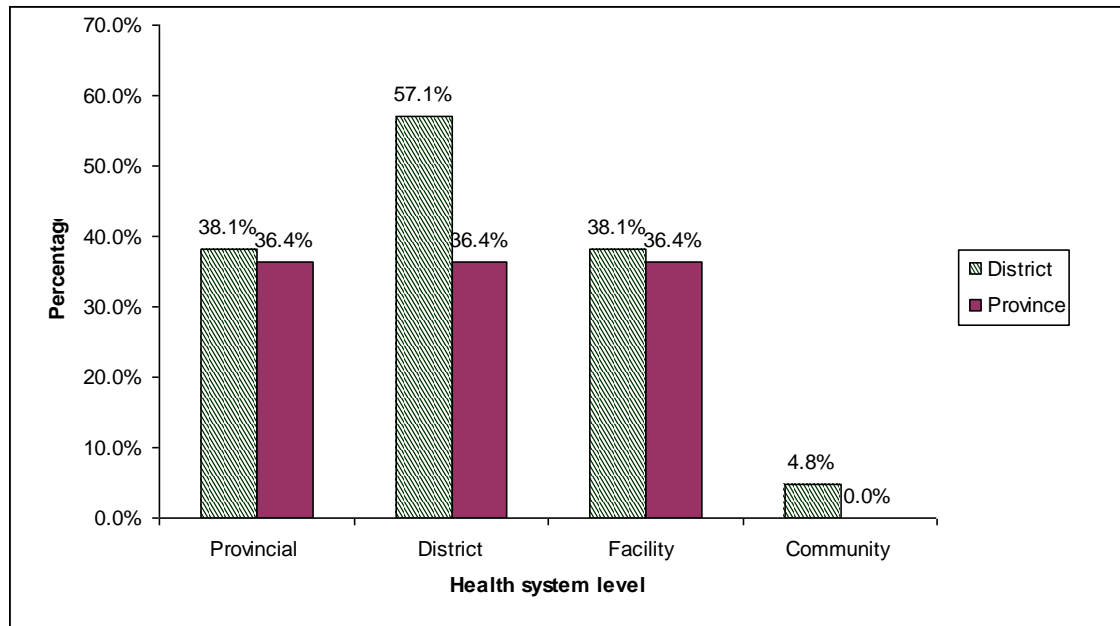
Figure 10: District and provincial level respondent's perceptions of the level at which additional persons are needed for data analysis, District Health Information System study, South Africa, 2009

Health data that is collected is stored manually or electronically using either a basic computer programme or an advanced computer programme such as the DHIS and ETR.Net. The majority of respondents (97%, 31/32) indicated that data that is collected is stored using an intermediate or advanced computer programme and 28 % (9/32) indicated that data collected is stored either manually or using a basic computer programme. Respondents (87%, 28/32), indicated that data is stored between 0-3 months before it is used. Respondents were also asked to rate the current system of storage of data. Overall 62% (13/21) of district respondents and 64% (7/11) of provincial respondents indicated that the system of storage is adequate (Figure 11). A greater number of provincial level respondents (18%) than district level respondents (4.8%) indicated that the system for storage of data is inadequate.
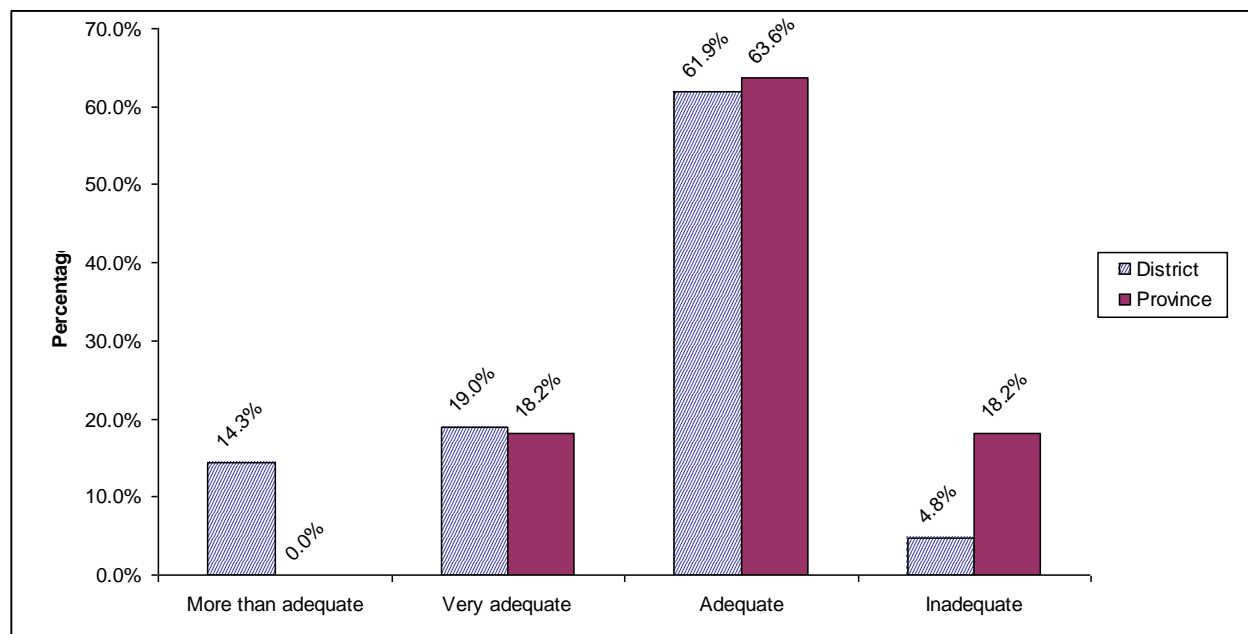
Figure 11: Responses by district and provincial level respondents in relation to the adequacy of the system for storage of data, District Health Information System study, South Africa, 2009

Following the collection and collation of data, analysis of the data forms the third critical step in the information cycle model. The analysis of data does not only imply the calculation of indicators but, the preparation of reports where indicators are presented, and discussed for various reporting purposes. The majority of respondents (87%, 27/32) indicated that their department or programme produces reports following the analysis of data.

Respondents were further asked to rate both the adequacy of the analysis that is done as well as the contents of reports with respect to meeting the reporting needs and requirements of their department / programme. No respondents indicated that the analysis that is done and the contents of reports that are produced are more that adequate in meeting their various reporting needs. Less than half of the respondents (45%, 14/31) indicated that the analysis done is adequate and 55% (17/31) felt that contents of reports produced are adequate to meet their reporting requirements. (Figure 12).
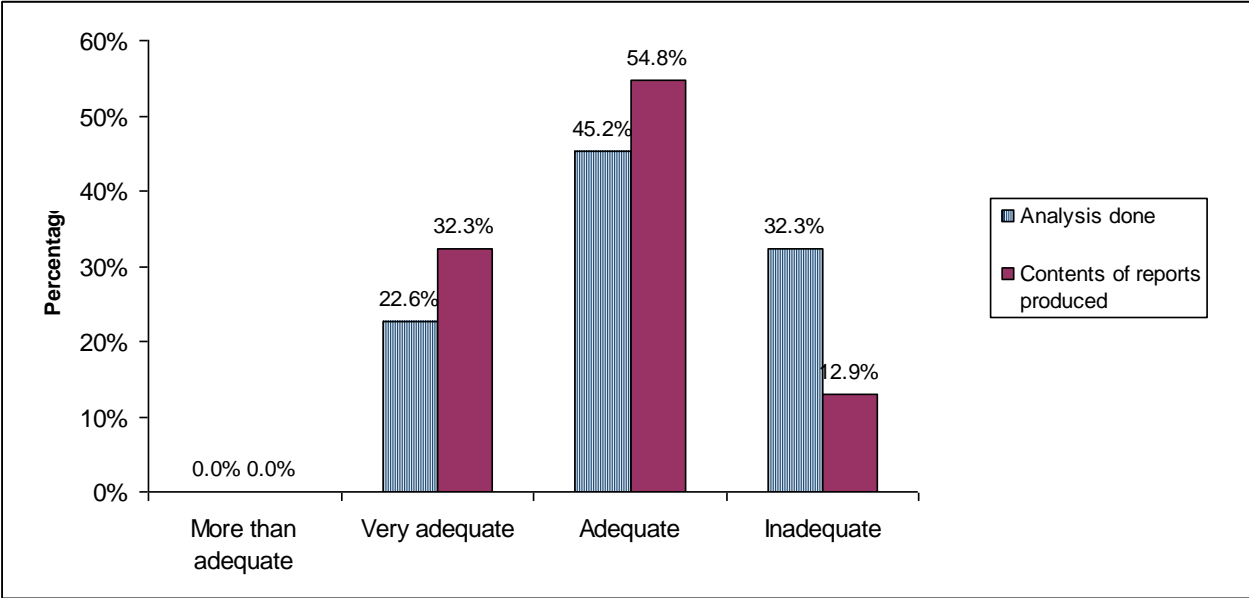
Figure 12: Responses by district and provincial level respondents about the adequacy of the analysis done and contents of reports produced in meeting the requirements of their department / programme, South Africa, 2009

4.1.5 Perceptions of health data sharing and feedback practices

This section focuses on the third and fourth objectives of the study which seek to review the health data sharing and feedback practices of respondents at district and provincial level. The NHIS/SA data flow policy stipulates the timeframes for the submission of routinely collected monthly data. In addition, some the data sets in the DHIS, like the Quarterly Reporting System, require submission of data on a quarterly basis. The utilisation and sharing of health care data is influenced by both the submission timeframes as well as the demand for data by stakeholders at the various levels in the health care system.

In order to assess the demand for data and information respondents were asked to indicate how they would rate the demand for data by those that they share the data with. The rating scale from which respondents had to select an exclusive option included: very high, high, low and very low. Provincial respondents rated the demand for information as very high (45%. 5/11) or high (54%, 6/11). Whilst more than half of the district level respondents rated the demand for information as

being high (57%, 12/21), a few respondents (14%; 3/21) also rated the demand the information as being low (Figure 13).
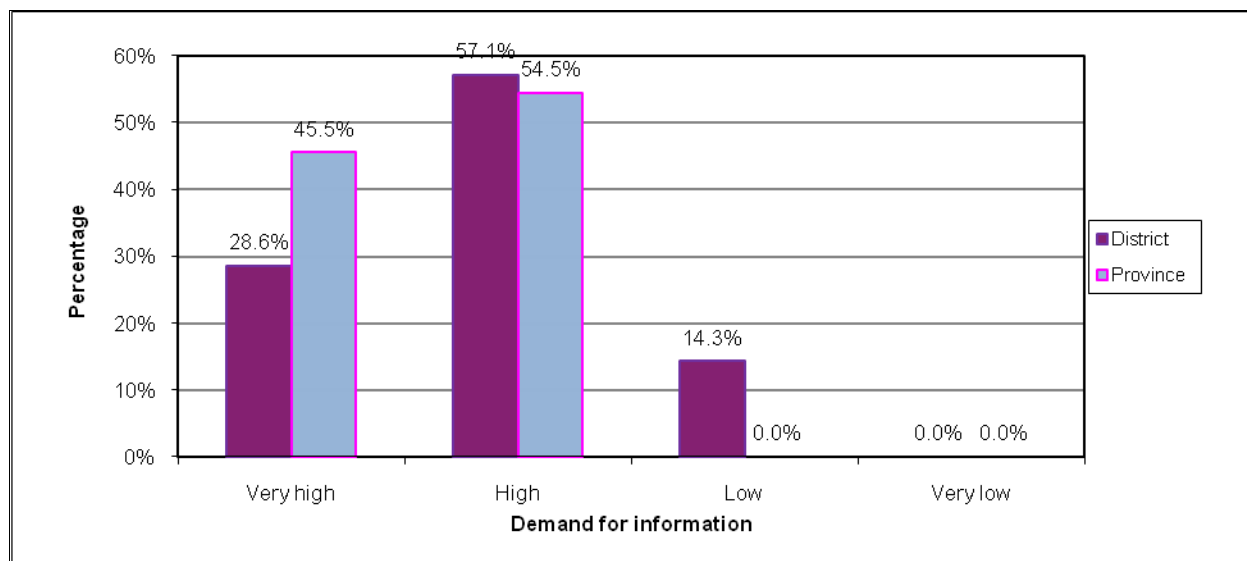
Figure 13: Responses by district and provincial level respondents to the demand for health information, South Africa, 2009

The frequency of sharing of information with relevant stakeholders was assessed by asking respondents to indicate (where more than one option applied) whether they share information, daily, weekly, monthly, quarterly, biannually, annually or at other intervals. A greater proportion of respondents indicated that they share information monthly (84%, 27/32), quarterly (72%, 23/32), and annually (53%, 17/32). Information sharing does take place on a daily and weekly basis, however more respondents (28%, 9/32) indicated that information sharing occurs on an ad-hoc basis based on demand and informal information requests.

Whilst the majority of respondents indicated that they share information with stakeholders at national (69%, 22/32), provincial (84%, 27/32) and district levels (87%, 28/32), more than half respondents (53%, 17/32) indicated that information is shared with development organisations i.e. NGOs and CBOs. Additionally, information is also shared with other sectors (social welfare, education, correctional services) as well and tertiary institutions and research groups as indicated by 28% (9/32) of respondents.

In order to obtain further insight with respect to sharing of health information respondents were asked to indicate through what means (where more that one option applied) information generated is shared. The most common method of sharing information as indicated by 91% (29/32) respondents is by means of hard copy reports, followed by e-mail (75%, 24/32) and workshops (72%, 23/32) (Figure 14). Four respondents (12%) indicated that they share information through other mean such as meetings, the departmental intranet and web portals.
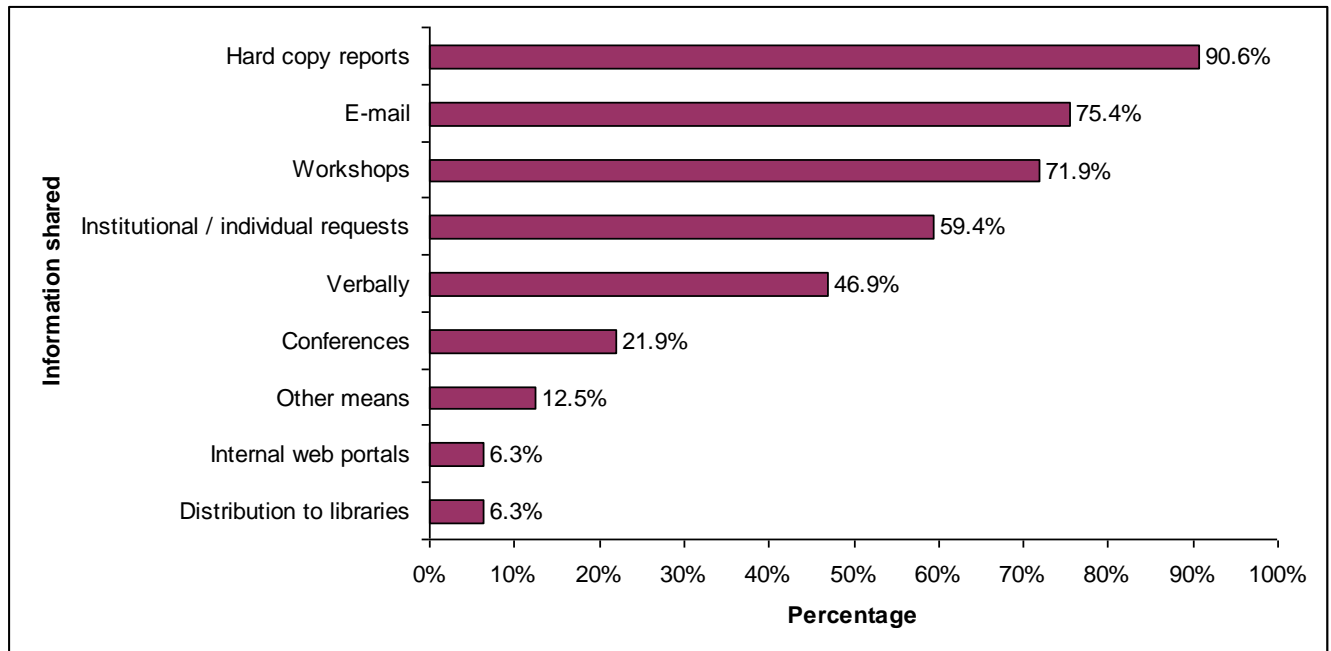
Figure 14: Respondent information in relation to the means by which health information is shared, District Health Information System study, South Africa, 2009

The generation reports and use of data for action and decision making is the final step of the information cycle model. Critically linked to this step is the feedback process to those sharing information. The process of feedback not only facilitates dialogue on the information that is presented but, provides the opportunity for the users of information to assess and review the quality of health data. In a closed question posed to respondents on whether they receive feedback on the reports they submit, 62% (13/21) from district level and 91% (10/11) indicated that they never get feedback (Table 7).

Table 7: District and provincial level respondent's perceptions on the feedback received on reports submitted, South Africa, 2009

Respondent level	Feedback on reports submitted			
	Frequently	**Seldom**	**Never**	**Total**
District	6 (28.6%)	2 (9.5%)	13 (61.9%)	21 (100%)
Province	1 (9.1%)	0 (0.0%)	10 (90.9%)	11 (100%)

4.1.6   Successes and challenges of data utilisation for decision making

The key purpose for the collection of health data and information is to inform the strategic planning process and to utilise the data for monitoring and evaluation. The focus on using health data for monitoring and evaluation has been gaining momentum and has been spurred by both national and international health system developments. When asked whether their department / programme utilises data and information for monitoring 100% (31/31)[j] respondents answered "yes" and 83% (25/30)[k] respondents answered "yes" when asked the same question in relation to evaluation.

The following examples were provided by respondents of the specific purposes for which data is used for monitoring and evaluation.

Monitoring of: strategic and operational plans, utilisation of health facilities by communities, facility infrastructure and planning, district health planning, district epidemiological profile, health service needs and priorities, data submission compliance, disease profile trends, budget and expenditure trends.

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[j] n=32 respondents answered the questionnaire, but one respondent indicated that they are "not sure" whether their department/programme utilises data for monitoring hence n=31.

[k] n=32 respondents answered the questionnaire, but two respondents indicated that they are "not sure" whether their department/programme utilises data for evaluation hence n=30.

Evaluation of: impact of health programmes, service norms and standards, programme performance, health service package implementation, annual performance plans, effectiveness and efficiency of programmes, mortality trends

Respondents were asked to rate the adequacy of the utilisation of data in their department / programme for decision making. Whilst 62% (13/21) district level respondents indicated that there is adequate use of the data for decision making, 54% (6/11) provincial level respondents indicated that there is inadequate use of data for decision making (Figure 15).
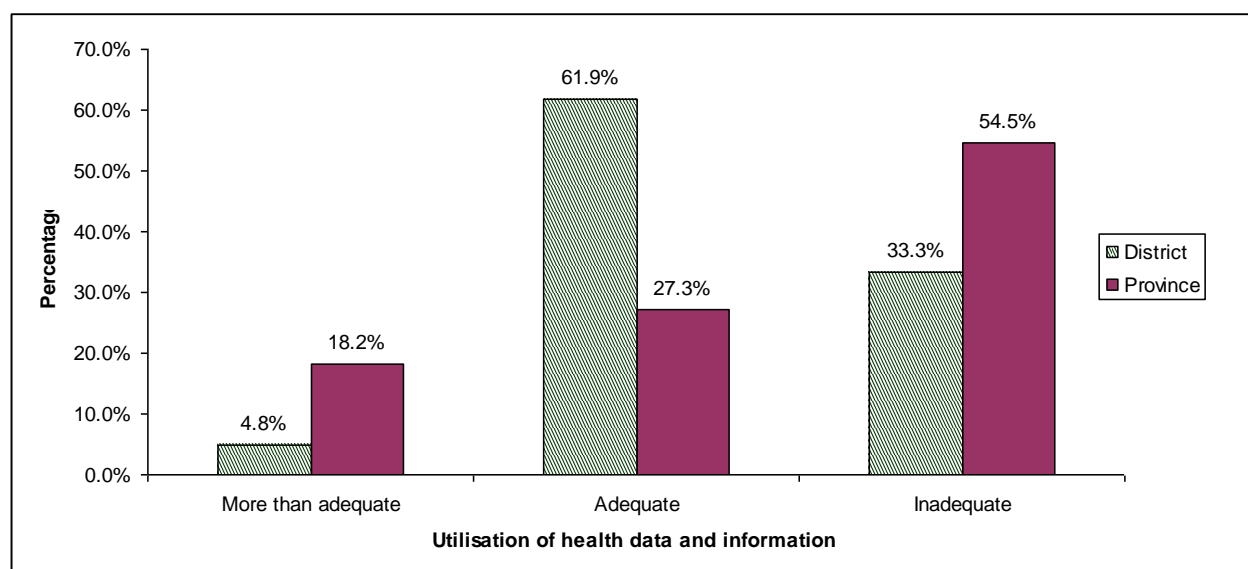
Figure 15: Responses by district and provincial level respondents in relation to the adequacy of utilisation of data for decision making, District Health Information System study, South Africa, 2009

An open-ended question was asked where respondents were required to provide their perceptions on both the successes and challenges of data utilisation at their level. Table 8 documents the responses by respondents at both district and provincial level. In some instances direct responses are included as quotations.

Table 8: District and provincial level respondent's perceptions on the successes and challenges of health data utilisation at their level, South Africa, 2009

Respondent level	*Data utilisation*
District	**Successes of data utilisation** • Training managers on the use of DHIS pivot tables increases managers skill and competence to generate their own reports • Coverage indicators have facilitated infrastructure planning • Enhanced discussion around the quality of data during the district health and operational health planning process • "Having a functional DHIS system"
	Challenges of data utilisation • Facility level data utilisation is minimal with greater dependence still being placed at sub-district level • The lack of ownership of data by facility managers • Indicators are used mainly for reporting to provincial and national levels and few indicators are used for planning at district level • Lack of understanding of the importance of data by managers at facility and institutional level • Delayed submission of data from reporting units • Lack of audit systems in place to improve the data integrity which results in reduced poor confidence in data • Poor understanding of epidemiological concepts by users of health data which results in reduced ability to interpret data • Too many irrelevant indicators are collected and are not used for decision making • Programme managers do not have the capacity and knowledge to adequately use indicators for improving service delivery. • Insufficient time for initiating forums for the discussion of data due to competing priorities and staff shortages
Province	**Successes of data utilisation** • The integration of parallel data sets which has resulted in a single data source i.e. the DHIS • The availability of standardised monthly programme reports from the DHIS • "Availability of equipment such as a laptop, cell phone and 3G to communicate and to pass on required data to relevant people" • Integration of data with other priority programmes • "Ownership and trust of the existing data processing system (DHIS) by managers"

Table 8: District and provincial level respondent's perceptions on the successes and challenges of health data utilisation at their level, South Africa, 2009 (cont.)

Respondent level	Data utilisation
	Challenges of data utilisation • Lack of targets and baseline data to allow for the analysis of trend data • Inconsistencies in the definitions of certain data elements and indicators which reduces the reliability of the data for planning • Lack of dedicated staff to run reports and to provide feedback • "Not everyone is informed about the importance of data" • Data sharing needs to be regular and more structured • Data utilisation is not guided by polices • "Poor quality data make it impossible to use the data" • Backlog in the capturing of TB data leads to delayed results and data is not available when needed • Poor understanding of basic information principles • Adherence to the NIDS reporting requirements results in some data elements not being collected and used

Additional information was gleaned from respondents with respect to the challenges experienced by asking respondents to indicate (where more than one option applied) the constraints that are encountered in the data management. The top 4 constraints as indicated by more than half of the respondents include: lack of human resources (97%, 30/32), lack of trained and competent staff (61%, 19/32), lack of understanding of data and information collected (58%, 18/32) and the lack of financial and material resources (54%, 17/32) (Figure 16). Other constraints also listed by respondents included:

- Lack of management support;
- Retention of trained and competent information staff due to low salary levels; and
- High staff turnover.
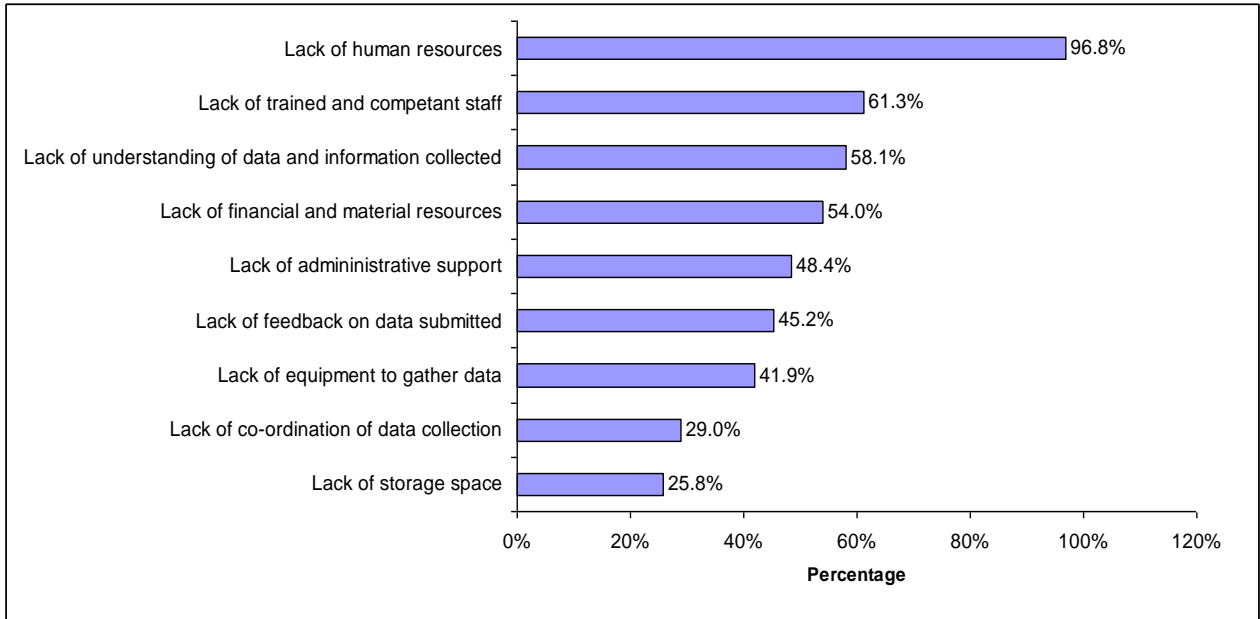
Figure 16: Respondent perceptions on the constraints encountered in data management, District Health Information System study, South Africa, 2009

4.2. SUMMARY

The results presented in this chapter relate to the aims and objectives of the study for phase 1 and phase 2. The summary of the results of the study will form the basis for the follow up discussion in Chapter 5 and recommendations and conclusion in Chapter 6.

CHAPTER 5: DISCUSSION

5.1. INTRODUCTION

The critical functions of data and information management which form the steps of the Information Cycle model is not only confined to persons who are responsible for health information but, there is growing awareness by all stakeholders in the health sector on the need for accurate and reliable health data. The increasing demand for health data from both national and international levels has highlighted the need for quality data to emanate from routine data collection systems. In South Africa, the data extracted from the DHIS has been scrutinised and challenged on an ongoing basis with respect to its accuracy, relevance, completeness and reliability. There is growing anecdotal evidence that the volume of data collected through the DHIS is too high, resulting in an increasing burden of information production and dissemination.

This study focussed on the DHIS, provided valuable insights on the data collection, analysis and sharing practices of health personnel at district and provincial levels. In addition, a snapshot of the indicators in the DHIS data sets provides information with respect to indicators that are available for monitoring and evaluation. In this chapter findings of the study are discussed and interpreted. Where appropriate, the current study findings will be compared to similar studies reported in the literature. The chapter is concluded by presenting some of the limitations of the study design and sources of data used.

5.2. ANALYSIS OF DATA

Previous research findings in the field of routine health information focussed on facility level data management issues and concerns and provided recommendations for strengthening systems at this level in order to improve the overall quality of routine health data (Garrieb *et al.* 2005; Mate *et al.* 2009). Whilst this study has highlighted the need for information systems strengthening at facility level (where data is collected) the responses obtained by both district and provincial level personnel, to the various areas reviewed and assessed, have expanded the scope of the study beyond just the collection of data. The perspectives of district and provincial level personnel provided interesting comparisons in relation to their health information needs and challenges.

This chapter discusses the results obtained according to the following areas:

- Data collection: Do we need to collect more data?
- Capacity: Do we need to invest in building information skills?
- Sharing, utilisation and feedback: Are we making a difference?
- Building on successes of the DHIS

- **Data collection: Do we need to collect more data?**

The aim of creating a minimum data set is to ensure that only a core essential group of indicators are generated for a given programme or service. The NIDS which has been revised and updated since its implementation, in 1999, as the essential routine data set for PHC and hospital data now comprises 219[l] indicators. In an attempt to integrate data into the existing national information system and to create a single data source for routine data, other parallel data sets have been integrated into the DHIS. The inclusion of additional data sets has had the effect of reducing and streamlining of data collection systems for monitoring and evaluation of health service delivery.

The extent to which the routine health information system facilitates and enhances the action of monitoring and evaluation of health programmes is dependent on the inclusion of relevant and appropriate indicators. A review of the performance indicators in the current routine system reveals fewer indicators that measure medium to long-term results of specific health outcomes.

The eight data sets that were included in this study were approved by NHIS/SA Committee for inclusion in the DHIS and to be implemented nationally. The results of the study indicate that there is 100% awareness by respondents, at district and provincial level, of the NIDS and STI surveillance data sets, however there is reduced awareness with respect to the other data sets. Of concern is the 95% and 91% awareness by respondents, at district and provincial level respectively of the QRS data set. The indicators[m] in the QRS, which is a National Treasury mandatory quarterly reporting requirement to determine progress against milestones and performance targets, are collated at district level and submitted to provincial level for finalisation and submission to

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[l] Includes the new EPI and PMTCT indicators that have been approved by NHISSA Committee in February 2009.

[m] Both financial and non-financial performance indicators are included in the QRS data set.

national level. The study findings highlight that although data sets have been approved for implementation from a national level, there is variability with respect to the roll out of these data sets across provinces. The study findings which further support this statement include provincial and district level respondents perceptions on the awareness and availability of the DHIS data sets. Over and above the seven data sets that were included in this study, respondents also indicated the availability of data from other data sets such as, antiretroviral therapy (ART), Notifiable Medical Conditions (NMC), nutrition, malaria and Electronic Tuberculosis Register (ETR.Net).

Discrepancies across provinces were noted with respect to the implementation of these data sets as some of these data sets are implemented as separate data collection systems. The statement by a district level respondent provides useful insight on the current data collection problems experienced, *"Some data that is required by managers (mostly provincial) is not included in a provincial NIDS but, vertical reporting is required by these managers which impacts negatively on the quality of data. We should look seriously at how much we are collecting and whether we are using all of it because we have ended up with an information explosion – back to the concept of an essential data set of 60 odd data elements – where are these days?"*. Rhode *et al*. (2008) have recommended that the NIDS be reviewed, by a national task team, on a two year basis. They have further added that that the process of review needs to be an inclusive bottom-up approach where districts and provinces are provided the opportunity to make submissions for changes to the NIDS. This recommendation concurs with the paper by Boerma and Stansfield (2007) who have called on national governments to focus on prioritising indicators by assessing several factors relating to the public health significance of measuring the indicator.

The seven main themes highlighted by respondents on the need for data collection focus mainly around core areas of planning, monitoring and evaluation and decision making with respect to health service provision. These themes are aligned to the district and provincial level respondent's key areas of data management that they are involved in i.e. information for decision making, reporting and the provision of feedback and data collation and analysis. According to respondents the indicators collected in the DHIS data sets and those that are available to them are "enough" for informing decision making. However, specific additional data collection needs were expressed by district and provincial level respondents and common across both levels is the need for community health services data and accurate district level mortality data.

- **Capacity: Do we need to invest in building human resources for health information?**

According to the study results there is a high demand for health information. The increase in the amount of data collected and the concomitant increase in the demand for data by higher levels, as described by AbouZahr and Boerma (2005), has significantly highlighted failings within health systems across developing countries to meet this demand for information. A particular concern, which has been documented by many studies, is the general need to build human resources capacity for health information (AbouZahr *et al.* 2005; Chaulagai *et al.* 2005; Rhode *et al.* 2008). The findings of the current study concur with previous study findings that such a need exists, however the current study goes a step further as it provides insight with respect to the health system level at which this need exists in South Africa.

The majority of district and provincial, level respondents indicated that there is a priority need for capacity for data collection at facility level. Due to the lack of dedicated full time information post at clinic level the current practice has been that the responsibility for data management rests either with the Facility Manager or a clinical staff member who has been assigned this responsibility. As succinctly described by AbouZahr *et al* (2005:581), "the assumption seems to be that health-care workers can take on the duties of health information officers. Yet providers are understandably reluctant to divert their attention from patient care to data recording". The similar view was expressed by respondents when asked why they think that capacity for data collection is needed at facility level. Their views are shared below:

- *"The nurses do not have the time especially at month end. They just do the statistics just to hand it over and continue with their normal duties"*
- *It is interesting to work on the data sets. What is lacking is to recruit a skilled data capturer that will be stationed at primary health care facilities because it's where we need to ensure accurate information. The workload is too high for professional nurses because they must attend to patients and at the same time they must make sure that all registers are up to date".*

Of the total number of respondents, 45% indicated that the analysis that is done is adequate for meeting their reporting requirements whilst 32% indicated that such analysis is inadequate. The study did not assess the specific reasons for the adequacy and inadequacy of data analysis for

reporting purposes, however, respondents were asked about their perceptions with respect to the level at which they felt that additional persons for data analysis was needed. Whilst a higher proportion of district level respondents (57%) compared to provincial level respondents (36%) expressed a need for additional capacity for data analysis at district level, a equal proportion of district and provincial level respondents indicated that this capacity was needed at provincial and facility levels. The perception by respondents that such a need exists at facility level is consistent with previous research findings (Odhiambo-Otieno and Odero 2005' Garrieb *et al.* 2008). The lack of capacity for information generation and analysis at district and facility level, according to AbouZahr *et al.* (2005), is a product of health sector reform where the focus has been on decentralisation of authority and decision making. They further argue that such reform has fuelled the capacity shortfall as health workers, at the same time, have not been adequately skilled and capacitated for increased responsibilities in information management. Interestingly, 97% and 61% respondents indicated that constraints encountered in data management are the lack of human resources and trained and competent staff respectively. Additionally, 47% respondents indicated that there is necessity for training in the area of data collation and analysis.

- **Sharing, utilisation and feedback: Are we making a difference?**

The sharing and utilisation of health data are critically linked to capacity issues. However, there is an added "intrinsic" dimension that impacts on the utilisation and sharing practices of health information. According to Aqil *et al.* (2009) the utilisation of data is linked to the behavioural determinants of confidence, motivation, and competence. Health care workers need to have confidence in the data, they should be motivated to improve data quality and feel competent to perform their tasks. One of the recommendations from the study conducted by Mate *et al.* (2009) for improving data systems was that health care workers need to perceive data as valuable in making a difference to their performance and delivery of health care. Mate *et al.* (2009) further argued that in order to achieve this data needs to be used and users of health information need to be supported and supervised in their data management tasks. Feedback forms a critical component of support and supervision.

The results of the current study reveal that approximately half of the provincial level respondents (54%) perceive that there is inadequate use of data for decision making, however, 62%) district

level respondents perceive that there is adequate utilisation of data for decision making. Although 87% respondents indicated that they produce and submit analysis reports, the majority of district level (62%) and provincial level (91%) respondents indicated that they never receive feedback on the reports they submit. The findings of this study concur with other studies that have revealed that feedback of data still remains a weak process in developing countries (Chaulagai *et al.* 2005; Garrieb *et al.* 2008; Lungo *et al.* 2008).

Feedback of data is one of the key mechanisms for improving the quality of data as it involves personnel in a dialogue process to identify data problems and solutions for action. However, with the practice of limited or no feedback of data that has been institutionalised in health care across developing countries, and in South Africa in particular, the opportunities for improving individual performance and learning are constantly being missed.

- **Building on successes of the DHIS**

Many criticisms have been documented in the literature against the development and implementation of routine health information systems in developing countries (Stanfield *et al.* 2006; AbouZahr *et al.* 2007; Aqil *et al.* 2009). The focus of these criticisms has been founded not on the technical and structural aspects of the system architecture but, on the data that is reported from these systems which tend to be biased towards information pertaining mainly to service delivery use and non-use. Such data needs to be supported and complemented with other sources of data such as population-based surveys and other regular annual facility based surveys (AbouZahr *et al.* 2007; Rohde *et al.* 2008).

The DHIS, which is a critical source of routine health information in South Africa, has been implemented over the last 10 years. Based on the concept of the essential data set, the DHIS system has in-built flexibility to facilitate the integration of data sets to allow for a single repository for routinely collected data. Many strides have been made over the years in building and simulating the DHIS to adapt to reform processes within the health sector. For example, the environmental health services and emergency medical services data now form part of the DHIS.

Whilst respondents highlighted some of the key successes of the DHIS to include:

- Flexibility and user-friendliness with respect to manipulating the organisational unit structure to accommodate district and facility needs;
- Data warehousing through the inclusion of semi-permanent and survey data; and
- Accessibility where pivot tables can be made available to all levels within the health care system.

They have also expressed a priority need for integrating data between the DHIS and other data collection systems such as the ETR.Net, PERSAL and BAS. In addition, district level respondents indicated that in order to improve the timeliness of data flow to national level it would be preferable to have data captured on a web enabled DHIS system.

5.3 LIMITATIONS

In this section some of the limitations of the study with respect to information and selection bias are discussed.

5.3.1 Information bias

The questionnaire that was used was developed solely for the purposes of the study by the principal investigator. Given that it was not used before, a pilot process was undertaken to ensure the reliability of tool. Based on comments received from the pilot process the tool wad adapted and finalised. Whilst efforts were made to reduce information bias by ensuring that the tool was administered in the same manner to all participants namely electronically, some bias could have been introduced into the study through the manner in which participants responded to questions.

The study focussed mainly on assessing participant's perceptions on information issues and this alone suggests that participants could have indicated responses that they believed the researcher wanted to hear and could have supplied more favourable answers than is currently the case in practice. In addition, the sample population was restricted to district and provincial level respondents and did not include respondents from other levels in the health system such as from facility and national levels.

5.3.2 Selection bias

No sampling of the study population was undertaken because the study population was a finite group of participants who were selected based on the specific area of study which is health information. However, due to the lower proportion of respondents to the study questionnaire selection bias could be inferred. The small sample size also affects the precision of the study results and therefore results should be interpreted with a degree of caution. Only 4 males (12%) were involved in the study and draws attention to the gender imbalance with respect to study findings.

Attempts were made to increase the overall number of respondents by following up on non-respondents via e-mail and telephonically. An improvement in the response could have been achieved by obtaining responses telephonically. This could have had an effect of reducing selection bias but also possibly introducing more information bias.

The study did not seek to assess the characteristics of the non-responders to determine whether they were systematically different from the responders. Given that valid e-mail addresses were obtained for the study sample and e-mail addresses that bounced were followed up, it could be the that those that responded were more passionate about their work and more enthusiastic to share their experiences about their work in the field of health information. Furthermore, the principal investigator, who is employed by a non-governmental health organisation, is involved in health information and higher responses were obtained from provinces where the researcher has conducted health information interventions.

5.4. SUMMARY

Based on the discussion, analysis and limitations that have been presented it is evident that the study results obtained need to be considered within the abovementioned context.

CHAPTER 6: RECOMMENDATIONS AND CONCLUSIONS

6.1 INTRODUCTION

The need for accurate, reliable and relevant information for planning, monitoring and evaluation has become a national government priority. The development and implementation of the GWM&E system is to provide unique information about the performance of government policies, programmes and projects. Through performance indicators stakeholders are able to identify what works, what does not and the reasons why. In the public sector, the value of M&E lies not simply in just the act of conducting monitoring and evaluation but, rather from using performance indicators to help improve service delivery and standards.

6.2 CONCLUSIONS

Studies that have been documented on the implementation of routine health information systems in developing countries, and the DHIS in particular, have highlighted critical areas where such systems need to be developed in order to meet the information and reporting needs of stakeholders at all levels in the health system.

The current study which focussed on provincial and district level, has provided valuable information and insight both on the information that is collected in the DHIS for monitoring and evaluation as well as the perceptions of users of this information. Whilst a greater number of indicators in the DHIS data sets are available for monitoring of health services, there is the perception by respondents that not all the information that is collected in the DHIS are used for decision making. There were varying perceptions by district and provincial level respondents with respect to the adequacy of health data utilisation. Some of the reasons provided for poor utilisation of data include: lack of feedback, poor understanding of data, lack of skills and competence in the interpretation of health data, poor data sharing practices among users of health information.

There was overall agreement by district and provincial level respondents that greater human resources capacity for health information is needed at facility level in order to reduce the burden of information collection that facility managers are faced with.

6.3. RECOMMENDATIONS

The following specific recommendations from the study are proposed:

- **Policy**

  A national policy for routine health information systems management needs to be developed within the context of changing national and international reporting requirements. Some provinces have taken the initiative to develop their own health information policy to guide information management in the province; however an overarching policy for the country is long overdue. Such policy also needs to outline the human resources requirements for health information.

- **Review of the NIDS**

  Since its implementation in 1999 the NIDS has been updated on an ongoing basis to meet emerging reporting requirements. A review of NIDS needs to be conducted. Such a review process should be nationally driven but, requires the involvement, engagement and input from key information personnel at both district and provincial levels.

- **Human resources for health information**

  There is a critical need for health information capacity at facility level. A post of Data Capturer or Facility Information Officer needs to be created as part of the permanent establishment of the facility. The other option is to invest in developing the skills of the Data Capturers who are currently serving their one year internship at facility level with the longer term aim of absorbing them into the public service.

- **Building health information competence**

  Strategies need to be put in place for improving skills and competence in health information. This study has highlighted specific emphasis on the need for health workers to be developed in analytical skills with respect to the interpretation of data.

6.4 RECOMMENDATIONS FOR FURTHER STUDY: STRENGTHENING THE EVIDENCE BASE

Based on the literature review and the increasing evidence highlighting barriers to the use of information suggest that access to information is necessary but not sufficient to change practice. The DHIS is a key source of routine health information in the country and the study has revealed that managers rely on information from the DHIS for evidence-based decision making. However, 10 years since its implementation there has been no research measuring the performance of the DHIS and its subsequent impact on health system performance.

The PRISM framework, which emphasises a "paradigm shift for designing, strengthening and evaluating routine health information systems" is proposed as the basis for future research on the DHIS (Aqil *et al.* 2009:217). The proposal is grounded on the following two tenets:

1. The framework considers technical, organisational and behavioural determinants (inputs) when assessing routine health system processes (processes) and how these impact on routine health system performance (outputs), health system performance (outcomes) and health status (impact).
2. Four diagnostic tools have been developed, standardised and implemented in developing countries and have produced consistent and valid results.

6.5 SUMMARY

Whilst new research is interesting and expands the evidence base recommendations from studies that have already been conducted on routine health information systems in South Africa need to be reviewed to determine whether they have reached the agendas of people who are in a position to action them.

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<u>**Appendix 1**</u>

<u>Participant Information Sheet</u>

Research Topic:

A review of health care indicators in the South African District Health Information System used for planning, monitoring and evaluation.

Introductory Statement

My name is Mrs Rakshika Bhana and I am currently a part-time student at the University of KwaZulu–Natal, studying towards a Master of Public Health. One component of this study involves research in a field of interest. I have chosen the field of Health Information Systems, with a focus on data and information collected through the District Health Information System (DHIS) with specific emphasis on the collection and use of the information. This research topic has two components. This questionnaire is based on the second component of the research which focuses on the collection and use of information. The results of this questionnaire will go towards the compilation of the research report.

You are being invited to participate in this research study. Please note that your involvement in the study will not affect your working conditions in the sense that whatever information is obtained in the interview will remain absolutely confidential and will not be shared with anyone. Your participation in the study is voluntary and your refusal to participate or to withdraw at any stage of the study, without giving a reason, will not result in any penalty being incurred.

It would be greatly appreciated if you could take the time to complete this self-administered questionnaire and e-mail it back to me at: rakshika@hst.org.za. The questionnaire should take you no longer than 20 minutes to complete.

If you choose to fill the questionnaire and return it then this will be taken as Consent that you are willing to share this feedback with the researcher. You are not asked to include any identifying information. The responses to this questionnaire are solely for the purpose of this research and utmost confidentiality will be maintained with respect to the responses received. I will ensure that no identifiable participant information will be used in publications that arise from this research and will change or delete any features that I deem may risk identification from the responses.

If you have further questions or require clarity please feel free to contact me. I look forward to your response.

Yours sincerely

Rakshika Bhana
rakshika@hst.org.za
Cell: 083 299 7083

(You may contact the Biomedical Research Ethics Office at the University of KwaZulu Natal, Westville Campus on 031-260 1074 if you have questions about your rights as a research subject).

Self Administered Questionnaire

Background Information

Enter as appropriate

NAME OF ORGANISATION AND PROVINCE	
SECTION / DEPARTMENT / PROGRAMME	
DESIGNATION	
BASED AT PROVINCIAL / DISTRICT LEVEL	
DATE:	

Basic Demographic Data

GENDER: (M/F)	
AGE:	
EXPERIENCE: HOW LONG ARE YOU IN THIS POST?	
ETHIC GROUP: (AFRICAN COLOURED INDIAN WHITE)	
HIGHEST EDUCATION LEVEL: (MATRIC, DIPLOMA, DEGREE, OTHER)	
HOW WOULD YOU RATE YOUR COMPUTER LITERACY: (POOR, AVERAGE, GOOD, EXCELLENT)	
AVAILABILIITY OF TECHNOLOGY (DESKTOP, LAPTOP OR BOTH)	

Section 1:
Review of the information collection and information needs

1.1 In what areas of data management are you involved? *(Cross (X) all relevant choices that apply)*

	Data Collection
	Data Storage
	Data Transmission
	Data Collation and Analysis
	Data Reporting & Reporting & Provision of feedback
	Data Use for decision making
	Never been involved in data management *(Skip to Q 2,4)*

1.2 Describe your work briefly.

………
………
………
………

1.3 What percentage of your time is involved in data management? *(Cross (X) one choice only)*

	75% -100%
	50% - 75%
	25% - 50%
	0% - 25%

1.4 Do you have any policies or guidelines for the use of data and information management? *(Cross (X) one choice only)*

	Yes
	No

If yes, please list these

………
………
………
………

1.5 Are you aware of the following DHIS data sets.
 (Cross (X) all relevant choices that apply)

	Primary Health Care
	Hospital
	STI Surveillance
	Emergency Medical Services
	Environmental Health
	Quarterly reporting system
	National Tertiary Services Grant
	Hospital Revitalisation
	Other (specify)

1.6 Which of the following DHIS data sets are relevant to your area of work?
 (Cross (X) all relevant choices that apply)

	Primary Health Care
	Hospital
	STI Surveillance
	Emergency Medical Services
	Environmental Health
	Quarterly reporting system
	National Tertiary Services Grant
	Hospital Revitalisation
	Other (specify)

1.7 In your opinion, how would you classify the amount of indicators collected in the DHIS data sets for management decisions? *(Cross (X) all relevant choices that apply)*

Key: 1= not enough
2 = just about enough
3 = enough
4 = more than enough

DHIS Data Set	1= not enough 2= just about enough 3 = enough 4 = more than enough
Primary Health Care	
Hospital	
STI Surveillance	
Emergency Medical Services	
Environmental Health	
Quarterly reporting system	
National Tertiary Services Grant	
Hospital Revitalisation	
Other (specify)	

1.8 Which of the data sets is presently available to you? *(Cross (X) all relevant choices that apply)*

	Primary Health Care
	Hospital
	STI Surveillance
	Emergency Medical Services
	Environmental Health
	Quarterly reporting system
	National Tertiary Services Grant
	Hospital Revitalisation
	Other (specify)

1.9 How much of the data listed below would you say is presently available to you? *(Cross (X) all relevant choices that apply)*

Key: 1 = too little
2 = little
3 = enough
4 = too much

DHIS Data Set	1 = too little 2 = little 3 = enough 4 = too much
Primary Health Care	
Hospital	
STI Surveillance	
Emergency Medical Services	
Environmental Health	
Quarterly reporting system	
National Tertiary Services Grant	
Hospital Revitalisation	
Other (specify)	

1.10 Why do you think there is a need for the collection and utilisation of data and indicators? Please explain

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

1.11 What more information would you like to collect that it is presently not being collected?

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

1.12 Please explain

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

1.13 What in your opinion are the positive features of using the DHIS for data management? Please list these.

....

....

....

....

....

....

....

....

1.14 What are some of the constraints that you encounter in data management? *(Cross (X) all choices that apply)*

	Lack of administrative support
	Lack of human resources
	Lack of financial and material resources to do the job
	Lack of understanding of data and information collected
	Lack of coordination of data collection
	Lack of feedback on data and information submitted
	Lack of equipment to gather data
	Lack of storage space
	Lack of necessary equipment
	Lack of trained and competent staff
	Other (specify)

1.15 Please provide any additional information you would like to share in terms of the existing information load or information needs of your department / programme?

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

Section 2:
Assessment of the capacity for data collection, storage, analysis, use and feedback.

2.1 Are you of the opinion that there is need for additional persons to be involved in data collection in the department? *(Cross (X) one choice only)*

	Strongly Agree
	Agree
	Disagree
	Strongly Disagree

2.2 At what level would you like these additional persons to be involved mostly? *(Cross (X) one choice only)*

	Provincial
	District
	Facility
	Community

2.3 Please explain

………
………
………
………

2.4 Are you of the opinion that there is need for additional persons to be involved in data storage in your department? *(Cross (X) one choice only)*

	Strongly Agree
	Agree
	Disagree
	Strongly Disagree

2.5 How is the data that is collected in your department stored? *(Cross (X) one choice only)*

	Manually (files, books)
	Basic computer programme e.g. Microsoft Excel
	Intermediate or advanced computer programme e.g. DHIS, ETR
	Other: (specify)

2.6 How long is data stored before it is used?

	0-3 months
	4-6 months
	7-9 months
	10-12 months
	After 12 months
	Other: (specify)

2.7 How would you rate the system for storage of the data? *Cross (X) one choice only)*

	More than adequate
	Very adequate
	Adequate
	Inadequate

2.8 Are you of the opinion that there is need for additional persons to be involved in data analysis? *(Cross (X) one choice only)*

	Strongly Agree
	Agree
	Disagree
	Strongly Disagree

Please explain

………
………
………
………

2.9 At what level would you like these additional persons to be involved mostly? *(Cross (X) one choice only)*

	Provincial
	District
	Facility
	Community

2.10 How do you analyse data and information? *(Cross (X) all choices that apply)*

	Manually
	Using basic computer programmes e.g. Microsoft Excel
	Intermediate or advanced computer programmes e.g. DHIS, ETR
	Other: (specify)

2.11 How would you rate the analysis that is done in terms of meeting the reporting needs of your department / programme? *(Cross (X) one choice only)*

	More than adequate
	Very adequate
	Adequate
	Inadequate

2.12 Does your department / programme produce reports after the analysis? *(Cross (X) one choice only)*

	Yes
	No

2.13 Please explain

………
………
………
………

2.14 How would you rate the content of the reports that are produced in terms of meeting the reporting needs of your department / programme? *(Cross (X) one choice only)*

	More than adequate
	Very adequate
	Adequate
	Inadequate

2.15 Where are your reports submitted? *(Cross (X) all choices that apply)*

	National Office (specify)…………………..
	District Office (specify)…………………..
	Provincial Office (specify)………………..
	Other (specify)…………………….
	Do not submit to any of the above

2.16 To which directorate are your reports submitted? List all the relevant directorates that apply in response to the above question.

National Office	Reports are submitted to the ff. directorates (list the directorates)
District Office	Reports are submitted to the ff. directorates (list the directorates)
Provincial Office	Reports are submitted to the ff. directorates (list the directorates)
Other	Reports are submitted to the ff. directorates (list the directorates)

2.17 How frequently do you submit reports? *(Cross (X) all choices that apply)*

	Daily
	Weekly
	Monthly
	Quarterly
	Biannually
	Annually

2.18 What means do you use to submit reports? *(Cross (X) all choices that apply)*

	Postal Service
	Courier
	Own transport
	Email
	Fax

2.19 Is there a specific individual who prepares these analysis reports? *(Cross (X) one choice only)*

	Yes
	No

2.20 Do you think it is necessary to have such an individual*? (Cross (X) once choice only)*

	Yes
	No

Please explain……….
…….…………
…….………………………
……….……………………………………

2.21 Do you receive feedback on the reports you submit? *(Cross (X) one choice only)*

	Frequently
	Seldom
	Never

2.22 Through what means do you receive the feedback? *(Cross (X) all that apply)*

	Verbally (e.g. telephonic)
	Email
	Meetings
	Hard copy feedback report
	Other (specify)

2.23 In your opinion, how would you classify the content of the feedback you receive in terms of meeting your data management needs? *(Cross (X) one choice only)*

	More than adequate
	Adequate
	Inadequate

2.24 Do you think that personnel in your department / programme are adequately trained in data management? *(Cross (X) one choice only)*

	Yes
	No

2.25 If no, in what areas do you think staff members need to be trained? *(Cross (X) all choices that apply)*

	Data Collection
	Data Storage
	Data Transmission
	Data Collation and Analysis
	Data Reporting & Reporting & Provision of feedback
	Data Use
	All of the above
	Other (specify)

Section 3:
Examining data utilisation and sharing practices and related problems

3.1 Does your department / programme utlise data and information for monitoring? *(Cross (X) one choice only)*

	Yes
	No

3.2 If yes, list the specific purposes for which data and information is used for monitoring.

1. …
2. ..
3. ..
4. ..
5. ..

3,2 Does your department / programme utlise data and information for evaluation? *(Cross (X) one choice only)*

	Yes
	No

3.3 If yes, list the specific purposes for which data and information is used for evaluation.

1. …
2. ..
3. ..
4. ..
5. ..

3.4 In your opinion, how would you rate the utilisation of data in your department / programme for decision making? *(Cross (X) one choice only)*

	More than adequate
	Adequate
	Inadequate

3.5 Please explain

……
……
……
……

3.6 What do you consider to be the success factors for data utilisation at your level?

1. ..
2. ..
3. ..
4. ..
5. ..

3.7 What do you consider to be the challenges of data utilisation at your level?

1. ..
2. ..
3. ..
4. ..
5. ..

3.8 With which organisations / departments / offices do you share the information you generate? *(Cross (X) all choices that apply)*

	National Office
	Provincial Office
	District Office
	Development organisations (NGOs, CBOs, FBOs)
	Do not share it
	Other (specify)

3.9 In your opinion, how would you classify the demand for information by those you share it with? *(Cross (X) one choice only)*

	Very High
	High
	Low
	Very Low

3.10 Through what means do you share information with others? *(Cross (X) all choices that apply)*

	Reports
	Email – hard copy
	Verbally e.g. telephone
	Workshops
	Distribution to national libraries
	Institutional/individual requests
	Provincial/national international conferences
	Other (specify)

3.11 How often do you share this information with others? *(Cross (X) all choices that apply)*

	Daily
	Weekly
	Monthly
	Quarterly
	Biannually
	Annually
	Other (specify)

3.12 What do you consider to be the successes of data sharing at your level?

1. ..
2. ..
3. ..
4. ..
5. ..

3.13 What do you consider to be the challenges of data sharing at your level?

1. ..
2. ..
3. ..
4. ..
5. ..

3.14 What more should be done to improve information sharing at provincial, district, facility and community levels?

1. ..
2. ..
3. ..
4. ..
5. ..

Thank you for taking the time to complete this questionnaire.

Appendix 2

UNIVERSITY OF
KWAZULU-NATAL

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: BREC@ukzn.ac.za
Website: http://research.ukzn.ac.za/ResearchEthics11415.aspx

17 December 2008

Mrs Rakshika Bhana
Health Systems Trust
Cnr of Victoria Embankment and Salmone Grove
401 Maritime Building, 4th floor
Durban
Dear Mrs Bhana

PROTOCOL:A review of Health care indicators in the South African District Health Information System used for Planning, monitoring and evaluation, MPH, Department of Public Health Medicine. Mrs Rakshika Bhana. Ref No: BE072/08.

EXPEDITED APPLICATION

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application dated 30 May 2008. The study is given full ethics approval and may begin as at **today's date; 17 December 2008.**

This approval is valid for one year from **17 December 2008 (today's date).** To ensure continuous approval, an application for recertification should be submitted a couple of months before the expiry date. In addition, when consent is a requirement, the consent process will need to be repeated annually.

I take this opportunity to wish you everything of the best with your study. Please send the Biomedical Research Ethics Committee a copy of your report once completed.

The sub-committee's decision will be RATIFIED at the next scheduled meeting of the Biomedical Research Ethics Committee to be held on **10 February 2009.**

Yours sincerely

PROFESSOR D WASSENAAR
Chair: Biomedical Research Ethics Committee

cc: Dr S Knight - Department of Public Health Medicine

Appendix 3

DIRECTOR GENERAL
HEALTH
REPUBLIC OF SOUTH AFRICA

PRETORIA
Private Bag X828, PRETORIA, 0001, 12th Floor, House of Trade and Industry 266 (HTI) Building, Cnr Prinsloo and Pretorius Street, PRETORIA, 0002 Tel (012) 312 0816   Fax (012) 323 0093
CAPE TOWN
P.O. Box 3875, CAPE TOWN, 8000, Room 404, 120 Plain Street, CAPE TOWN, 8000 Tel (021) 461 2040 Fax (021) 461 6864

ENQUIRIES: MR. T.C. MASILELA
CLUSTER MANAGER: STRATEGIC PLANNING
TEL: 012 312 0533

MS. RAKSHIKA BHANA
HEALTH SYSTEMS TRUST AND
UNIVERSITY OF KWAZULU-NATAL (UKZN)
PO BOX 808
DURBAN
4000

DEAR MS. BHANA

REQUEST TO CONDUCT A RESEARCH PROJECT ON DISTRICT HEALTH INFDORMATION SYSTEMS (DHIS) DATA USED FOR PLANNING, MONITORING AND EVALUATON.

1. Your letter dated 18 November 2008 has reference.

2. The National Department of Health (DoH) hereby grants you approval to conduct a Research Project as part of your studies for the degree of Masters in Public Health at the University of KwaZulu-Natal (UKZN), focusing on the subject of on indicators from the District Health Information System (DHIS), which are used for planning, monitoring and analysis.

3. This approval is subject to the following conditions:

3.1. The final report of this research project must be submitted to the National DoH as the same time as it is submitted to the University of KwaZulu-Natal. The National DoH is the custodian and owner of the information from the DHIS.

1

3.2. Written consent must obtained from the National DoH prior the publication of the findings from this study in academic journals or any other form of electronic or print media.

We wish you well with the rest of your studies.

MR. T.D. MSELEKU
DIRECTOR-GENERAL: HEALTH
DATE 2008-12-08

2

Eastern Cape Department of Health

Enquiries:	Zonwabele Merile	Tel No:	040 608 0830
Date:	26th May 2009	Fax No:	043 642 1409
E-mail address:	zonwabele.merile@impilo.ecprov.gov.za		

To: Mr Rakshika Bhana

Re: A review of health care indicators in the South African District Health Information System used for planning, monitoring and evaluation

The Eastern Cape Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Eastern Cape Department of Health in writing.

2. You are advised to ensure observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants. You will not impose or force individuals or possible research participants to participate in you study. Research participants have a right to withdraw anytime they want to.

3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.

4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.

5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

Ikamva eliqaqambileyo!

DIRECTORATE: EPIDEMIOLOGICAL RESEARCH & SURVEILLANCE MANAGEMENT

health Department: Health **MPUMALANGA PROVINCE**	No. 7 Government Boulevard Riverside Park Extention 2 NELSPRUIT 1200	Private Bag X 11285 NELSPRUIT 1200 Tel.: +27 13 766 3429 Fax: +27 13 766 3458
Litiko LeteMphilo	UmNyango WezaMaphilo	Departement van Gesondheid

Enquiries: Molefe Machaba /Kate Mathe (013) 766 3009/3102

01 JUNE 2009

Mrs Rakshina Bhana

P.O. Box 65949

Reservoir Hills

DURBAN

4090

Dear Mrs Rakshina Bhana

APPLICATION FOR RESEARCH & ETHICS APPROVAL: A REVIEW OF HEALTH CARE INDICATORS IN THE SOUTH AFRICAN DISTRICT HEALTH INFORMATION SYSTEM

The Provincial Research and Ethics Committee has approved your research proposal in the latest format that you sent. No issues of ethical consideration were identified.

Kindly ensure that you provide us with the report once your research has been completed.
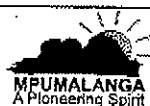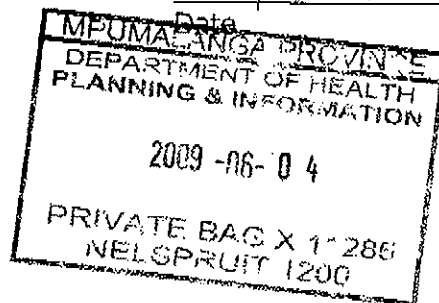
Kind regards,

Molefe Machaba
Research and Epidemiology

Mpumalanga PHREC
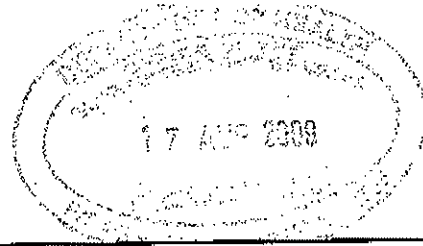Acting Chairperson: M. Machaba.

06 - 06 - 2009
Date

06 / 06 / 2009

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Mafikeng, 2745
Private Bag X2068
MMABATHO, 2735

POLICY, PLANNING AND RESEARCH DIRECTORATE

Tel: (018) 387 5780
Fax: 0866 352 751
mosianer@nwpg.gov.za

TO	:	**The Office of Superintendent- General North West Department of Health**
FROM	:	**Mr K Rabanye Director: Policy, Planning and Research**
DATE	:	**14 August 2009**
SUBJECT	:	**A review of health care indicators in South African District Health Information System used for Planning, Monitoring and Evaluation.**

CHIEF DIRECTORATE
CORPORATE SERVICES
1 7 AUG 2009
RECEIVED

The above subject matter refers

1. Purpose

To appeal for a final approval for a research study to be undertaken in North West Province.

2. Background

Ms R Bhana the Principal Investigators of the above mentioned research study has requested permission to undertake a study on review of health care indicators in the DHIS in South Africa.

The researcher's protocol has been reviewed by the members of Provincial Health Research Committee and their verdict is that the researcher be granted an approval as the study could benefit the department especially in issues of Planning. Ethics approval letter from University of Kwa Zulu Natal was submitted.

3. Aim and Objective

The aim of the study is to review and classify health care indicators in the National Health data sets used for planning, monitoring and evaluation in order to support effective collection, analysis and use of information by District Health Information Officers and Programme Managers at District and Provincial levels in South Africa.

4. Financial Implications

There are no financial Implications for the department of Health and Social Development.

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4.1 Specific Action

4.1.1 The Chief Director to further recommend for final approval by the Superintendent General, Dr L.K. Sebego

4.1.2 The Superintendent General to grant approval.

signature

Mr K Rabanye
Director: Policy, Planning and Research

Recommended for approval/Not recommended

signature

Mr M.W.Mbulawa: Chief Director: Corporate Service
Final approval

Recommended for approval/Not recommended

Notes : ....

....

Granted / Not granted

signature

Dr L.K.Sebego
Superintendent –General
North West Department of Health

Appendix 4
Participant Information Sheet

Research Topic:

A review of health care indicators in the South African District Health Information System used for planning, monitoring and evaluation.

Introductory Statement

My name is Mrs Rakshika Bhana and I am currently a part-time student at the University of KwaZulu–Natal, studying towards a Master of Public Health. One component of this study involves research in a field of interest. I have chosen the field of Health Information Systems, with a focus on data and information collected through the District Health Information System (DHIS) with specific emphasis on the collection and use of the information. This research topic has two components. This questionnaire is based on the second component of the research which focuses on the collection and use of information. The results of this questionnaire will go towards the compilation of the research report.

You are being invited to participate in this research study. Please note that your involvement in the study will not affect your working conditions in the sense that whatever information is obtained from the questionnaire will remain absolutely confidential and will not be shared with anyone. Your participation in the study is voluntary and your refusal to participate or to withdraw at any stage of the study, without giving a reason, will not result in any penalty being incurred.

It would be greatly appreciated if you could take the time to complete this self-administered questionnaire and e-mail it back to me at: rakshika@hst.org.za. The questionnaire should take you no longer than 20 minutes to complete.

If you choose to fill the questionnaire and return it then this will be taken as Consent that you are willing to share this feedback with the researcher. You are not asked to include any identifying information. The responses to this questionnaire are solely for the purpose of this research and utmost confidentiality will be maintained with respect to the responses received. I will ensure that no identifiable participant information will be used in publications that arise from this research and will change or delete any features that I deem may risk identification from the responses.

If you have further questions or require clarity please feel free to contact me. I look forward to your response.

Yours sincerely

Rakshika Bhana
rakshika@hst.org.za
Cell: 083 299 7083

(You may contact the Biomedical Research Ethics Office at the University of KwaZulu-Natal, Westville Campus on 031-260 1074 if you have questions about your rights as a research subject).