

**A health system perspective on factors  
influencing the use of health information for  
decision-making in a district health system**

**Vera Eileen Scott**

**9837612**

**A thesis submitted in fulfilment of the requirements for the degree  
of Doctor of Philosophy in the School of Public Health, Faculty of  
Health Sciences, University of the Western Cape.**

The logo of the University of the Western Cape is centered behind the text. It features a classical building facade with a pediment and columns, with the text 'UNIVERSITY of the WESTERN CAPE' overlaid in a light blue color.

**Supervisors: Prof Uta Lehmann, Prof Helen Schneider**

**20 November 2015**

# Keywords

Health management

District health system

Health system strengthening

Health information

Health information system

Experience-based knowledge

Reflective learning

Organisational learning

Governance

Multiple case study



# Declaration

I declare that *A health system perspective on factors influencing the use of health information for decision-making in a district health system* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

**Full name:** Vera Eileen Scott

**Signed:**

*V Scott*

**Date:** 20 November 2015



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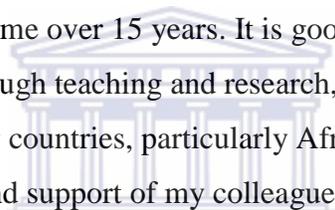
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# Dedication

I dedicate this thesis to my three children who have been my joy and inspiration throughout the research process. They are fearless in seeking new knowledge and they believe that the world is theirs to explore. They have awakened my mind to the power of curiosity and of playing with questions, until finding one that matters. They know that each person is worthy of the fullness of life, and that *together* we can change the world. Furthermore, each child has made a particular contribution to this research process. Joel has shown me the potential of *creative expression* as a force for change. He has found the courage to be himself. Lauren has modelled the art of observing gently and has taught me the wonder of logic as a way of constructing meaning in the world around us. She knows how to be *true to the voice within*. Nathan has reminded me that reading aloud is a wonderful communal past-time, rivalled only by playing soccer. He has taught me that *being together* matters. He contributes, and is empowered, by caring for those around him.

To

Joel Timothy Tyler-Scott (aged 11 years and 8 months)

Lauren Emily Tyler-Scott (aged 9 years and 9 months)

Nathan Samuel Tyler-Scott (aged 7 years and 7 months)

I also dedicate this thesis to my husband who has walked alongside me for 15 years now on the various journeys of life. He lives out his passion to see a fairer and more just society. He saw the potential that this PhD process held for growth and giving before I did. Of the many paths we choose together, we love those that lead into the mountains best.

To

Paul Tyler

And finally I dedicate this thesis to my mother, and to my late father and brother. They have shaped my life.

To

Jean de Villiers

Bill (William Christy) Scott (died 2012)

Paddy (William M<sup>c</sup>Kenzie) Scott (died 1988)

# Abstract

A health system perspective on factors influencing the use of health information for decision-making in a district health system.

V.E. Scott

Submitted for Doctor of Philosophy, School of Public Health, Department of Community Health Sciences, University of the Western Cape.

This research explores a poorly understood area of health systems: the nature of managerial decision-making in primary healthcare facilities, and the information that informs decision-making at this level. Located in the emerging field of *Health Policy and System Research*, this research draws on constructivist and participatory perspectives to understand the role of information and, more broadly, learning and knowledge in decisions that primary healthcare managers make, and the systemic factors influencing this. Using a multiple case study design with iterative cycles of in-depth data collection and analysis over a three year period, it examined the decision-making and information use in three cases of managerial responsibility in 17 primary healthcare facilities in a sub-district in Cape Town. The cases were: improving efficiency of service delivery, implementing programme priorities and managing leave of absence. Using multiple strategies for engaging primary healthcare facility managers, often as co-researchers of their own practice, the research sought to elicit both their explicit and tacit, experience-based knowledge on these phenomena.

Key insights gained in the research are that firstly, operational health management at facility level is less linear and simple than policy-makers and planners often assume, and is, instead, characterised by considerable on-the-spot problem solving and people management to meet multiple agendas, which can be surprisingly complex. Secondly, contrary to prevailing views, managers *do* actively use information in decision-making, but require a wide range of information which is outside of the current, and indeed the globally-advocated, health

information system (HIS). Thirdly, they not only use, but *generate*, information in their management routines and practices, and must learn from experience in order to adapt new interventions for successful implementation in their facilities and communities.

This research thus makes explicit the value and use of *informal* information and knowledge in decision-making. It demonstrates, amongst others, a relationship of functional interdependence between the use of formal information in the HIS, and informal information and knowledge, suggesting that the latter has the potential to improve the use and utility of formal health information by making sense of it within the local context. Furthermore, building on the public policy literature on governance, this research develops a model to understand the multiple contextual influences on decision-making and information use, showing the central role of values and relationships across the health system. It proposes a causal mechanism for strengthening the use of information in decision-making.

Finally, in giving priority to the informational needs of facility managers, this research offers a bottom-up perspective which argues for an integrated approach to health system strengthening which moves beyond atomised treatment of HIS strengthening. It suggests the need to re-think how to support facility managers by re-positioning the HIS relative to organisational learning, and leadership and management development.

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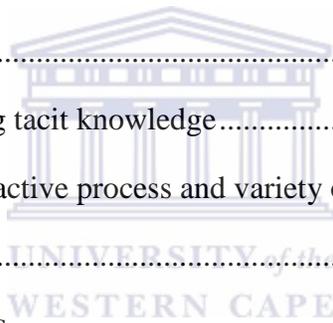
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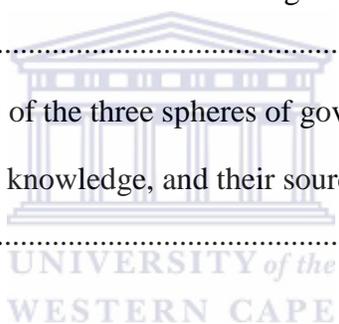
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## List of acronyms and abbreviations

APP	Annual Performance Plan
ART	anti-retroviral therapy
BANC	basic antenatal care
BMI	Budget Management Instrument
CNPs	clinical nurse practitioner
DEXCO	Divisional Executive Committee
DHIS	district health information system
DHMIS	district health management information system
DHS	district health system
DIALHS	District Innovation, Action and Learning for Health System Development
DM	district management
DMAF	District Management Accountability Framework
DMT	district management team
DoH	Department of Health
DSS	decision support system
etc.	and so forth (latin: <i>et cetera</i> )
e.g.	for example (latin: <i>exempli gratia</i> )
ENs	enrolled nurse
ENA	enrolled nurse assistant
FP	family planning
GWMES	Government-Wide Monitoring and Evaluation System
HAST	human immunovirus [HIV]/sexually-transmitted infections/tuberculosis
HCT	human immunovirus [HIV] counselling and testing
HIS	health information system
HISP	Health Information Systems Programme
HISPP	Health Information System Pilot Programme
HIV	human immunovirus
HMIS	health management information system
HPSR	Health Policy and System Research

HOD	head of department
HR	human resources
HRD	human resources development
HRM	human resources management
HRH	human resources for health
HRIS	human resource information system
ICT	information and communication technology
IDP	Integrated Development Plan
i.e.	that is (latin: <i>id est</i> )
IMCI	Integrated Management of Childhood Illnesses
IS	information systems
ISDMT	Interim Sub-district Management Team
IT	information technology
IUCD	intra-uterine contraceptive device
KPA	key performance area
M&E	monitoring and evaluation
MDGs	Millennium Development Goals
MDHS	Metro District Health Service
MDS	minimum dataset
MOU	midwife obstetrical unit
n.d.	not dated
NHISSA	National Health Information Systems Committee of South Africa
NPO	not-for-profit organisation
NSDA	Negotiated Service Delivery Agreement
OPD	outpatient department
PA	personal assistant
PCV	pneumococcal vaccine
PDR	Plan-Do-Review
Persal	Personnel Salary System
PHC	Primary Health Care
PHCIS	Primary health care information system

PMA	Performance Management Agreement
PMTCT	prevention of mother-to-child transmission
PN	professional nurse
Prehmis	Patient Record and Health Management Information System
RHIS	routine health information system
RH	reproductive health
RHI	routine health information
RHINO	Routine Health Information Network
RHIS	routine health information system
RMR	Routine Monthly Report
SD	sub-district
SECI	Socialisation-Externalisation-Combination-Internalisation
SMS	senior management services
STI	sexually-transmitted infection
SAP	Systems, Applications and Products
SLA	Service Level Agreement
SOP	standard operating procedure
TB	tuberculosis
TB DOTS	Directly Observed Treatment Short Course for Tuberculosis
WHO	World Health Organization
WTS	Waiting time survey



# Chapter 1. Introduction

## 1.1 Introduction

The context of service delivery has become increasingly complex, with changes in disease profiles and client needs, new technologies and health system reforms (Management Sciences for Health, 2005). Increasingly, the number of health programmes and range of services, depends not only on key resources such as finance and drugs, but also how these resources are managed (Egger et al., 2005). This highlights the need to improve management capacity to ensure that the desired health gains are met.

In essence, management entails making decisions (Simon & Newell, 1970; Simon, 1955): health managers make decisions which are essential to improving health outcomes, including how to implement policy, manage resources, and design strategies to improve health service delivery. In making such decisions, managers use information (Mintzberg, 2009; Simon, 1955). Indeed the principle on which modern scientific management is founded is that management requires the rational use of systematically collected information (Fayol, cited in Mutemwa, 2001). In the health literature, it has long been argued that information is essential for rational and effective decision-making (Heywood & Campbell, 1997; Lippeveld, Sauerborn, & Bodart, 2000). Health information plays a vital role at all levels of the health system (Boerma et al., 2010; Health Metrics Network, 2008b) and health information systems (HISs) have been designed to provide this information (Lippeveld et al., 2000), thereby playing an important support function to managers (World Health Organization, 2007a). What kind of information is needed and used in management, and how it is used in decision-making, is therefore a critical topic for research. Understanding this has bearing on support of managers in their decision-making, and thereby, service delivery improvement.

For the last two decades there has been increasing interest in health system strengthening, largely resulting from widespread agreement that improved health outcomes cannot be achieved without it (Travis et al., 2004; Freedman et al., 2005; United Nations, 2005; Mills, 2007; World Health Organization, 2008). Models for health system strengthening place emphasis on improving service delivery, which requires good management at all levels of the

system, and importantly at the level of implementation. Specific models have been developed to improve management capacity, with attention to increasing the number of trained, skilled managers, and providing the resources and system support that managers need to do their work effectively (Egger & Ollier, 2007). In this regard, improved governance and health information systems have been seen as levers to whole health system strengthening (de Savigny & Adam, 2009). This leverage occurs through HISs producing information to inform decision-making (RHINO, 2001; Lippeveld et al., 2000) and, in so doing, to improve health outcomes (Aqil, Lippeveld, & Hozumi, 2009; Health Metrics Network, 2008b). The central role of health information in both governance (having oversight of resources deployed and the outcomes achieved) and in management (using information to plan appropriate services), has been recognised (Health Metrics Network, 2008b), leading to substantial investment in health information systems (Shakarishvili et al., 2011; AbouZahr & Boerma, 2005). Concurrently, global attention on the Millennium Development Goals (MDGs) has emphasised the importance of building HISs that can provide reliable and good quality information (Aqil et al., 2009). This enables the global community and national governments to monitor progress towards the MDGs. Underlying this is the notion that “what gets measured gets managed”, a frequently quoted management axiom, often attributed to Peter Drucker (Emiliani, 2000), that suggests that what is monitored becomes the focus of management attention.

Another item on the health system agenda, the Primary Health Care (PHC) approach, is concerned with development of health systems to improve health outcomes, and remains highly relevant in developing regions of the world (World Health Organization Regional Office for Africa, 2008; Pan American Health Organization, 2007; World Health Organization Regional Office for Africa, 2008; World Health Organization Regional Office for the Eastern Mediterranean, 2009). Since the late 1980s, the district health system has been promoted as the means of implementing the Primary Health Care approach (Tarimo & Fowkes, 1989), since it offers decentralised management of health services to ensure that health services are appropriate, accessible, responsive to population needs and equitable.

*Decentralization of health system structures and management is a key issue for many countries in the achievement of "health for all by the year 2000" and in the development of primary health care (Mills et al., 1990, p5).*

In developing country contexts, a focus on strengthening management at the district and facility level remains a crucial aspect of health system strengthening. In Africa, the priority areas outlined for action in the *Ouagadougou Declaration on Primary Health Care and Health Systems in Africa 2008*, include strengthening of health information systems and improved service delivery, which is to be achieved, to a large extent, through better management (Barry et al., 2010). Facility managers are seen as key to improving service delivery (Nzinga, Mbaabu, & English, 2013).

This chapter introduces the topic of health management as crucial to improving service delivery and achieving desired health outcomes, particularly in the context of complex health systems. The question of how best to support managers - particularly those at the level of services delivery - arises. The chapter turns to the health management literature to consider what is known about decision making and information use. It identifies gaps in current health management knowledge and describes how the research was developed within the District Innovation, Action and Learning for Health System Development (DIALHS) project, a larger research initiative within which this research was nested. This chapter locates this research in the new field of Health Policy and System Research, and describes the research perspective which frames the multiple case study design. The five-fold purpose of this research is explored in relation to its contribution to local management and governance practice, as well as current theory. A detailed description of the study site is presented before ending with a description of how the rest of the thesis is structured.

## **1.2 Insights and gaps in the health system literature**

Most of the health management literature on information use is focused on health information systems, and there is widespread concern that the information produced by health information systems is not always used, or is not used adequately to design, maintain and improve health services (Aqil et al., 2009; Beesley, Cometto, & Pavignani, 2011; Braa et al., 2001; Chaulagai et al., 2005; Coleman & Garten, 2009; Edwards & Lippeveld, 2004; Health Metrics Network, 2008b; Heywood & Campbell, 1997; Mboera et al. , 2001). This problem is at all levels of the health system, including district and facility level (Garrib et al., 2008; Lippeveld et al., 2000; Muschel, 1999) and is in part attributed to the “culture of information

use” being insufficient (Anifalaje, 2012; Asangansi, 2012; Cibulskis & Hiawalyer, 2002; Egger al., 2007; Egger & Ollier, 2007; Karuri et al., 2014; Ndabarora, Chipps, & Uys, 2013b; Simwanza & Church, 2001; Williamson & Stoops, 2001). Calls to use information for decision-making have become increasingly urgent (Health Metrics Network, 2008b) and led to projects such as the *Country-led initiatives to strengthen national health information systems in East Africa* (Coleman & Garten, 2009) - focused on fostering country ownership to value and manage health information as a national asset, and the *Data for decision making project* (Pappaioanou, 2003; Wilkins et al., 2011) - aiming to demonstrate the usefulness and potential for improving service delivery and health outcomes.

A number of evaluations over the years have identified constraints to HIS effectiveness and information use. Most of the work has been done on systems that are failing, as discussed by Chaulagai et al. (2005), Gladwin (2003) and Odhiambo-Otieno (2005). Factors identified as contributing to the failure of health information systems and leading to poor information use have been used to develop models for designing, strengthening and evaluating health information systems, such as the Performance of Routine Information System Management (PRISM) framework (Aqil et al., 2009), the HMN assessment and monitoring tool: version 4 (Health Metrics Network, 2008a) and the logic model for strengthening the use of health data in decision making (Nutley & Reynolds, 2013). The first two of these tools provide impressive checklists of determinants, with detailed questions to be asked to uncover technical, behavioural and organisational constraints.

Also in the health management literature is a small body of work which suggests that health information is indeed used in decision-making at district and facility level, but argues that this information is not necessarily from the health information system. Indeed, some of what is used may be *informal* or *soft* information (Damtew, Kaasbøll, & Williamson, 2009; Østmo, 2007; Williamson & Kaasbøll, 2009). Furthermore, while technical documents, for example that of Lippeveld et al. (2000), make the assumption that health management involves rational decision-making processes and information from the health information system, there is research, for example that of Mitton and Patten (2004) which suggests that intuition and tacit knowledge are also used in decision-making.

This recognition has alerted the researcher to a knowledge gap concerning health information, which has formed the catalyst for this research. While the health management literature suggests that information from the HIS is poorly used, and documents numerous constraints, including an insufficient “culture of information use”, very little research has been undertaken on health information systems that are working *well*, and where managers are using information effectively. For more recent research that offers such perspectives, see for example, Angeles, Hemed, Hyslop, Johnston, and Koleros (2012), Mutale et al. (2013) and Nutley, McNabb and Salentine (2013). While the PRISM framework (Aqil et al., 2009) and the logic model for strengthening the use of health data in decision making (Nutley & Reynolds, 2013) have begun to model the conditions required to promote use of information from the HIS, there is currently no work which explores *how* information is used; nor is there any research which suggests a causal mechanism which can be exploited in interventions to improve the use of information from a HIS, which in terms of Realist Evaluation could be called *a middle range theory*. Such a theory has been described as “ideas about how the world works, comprising categories and concepts derived from analysis, and suggestions about how they are linked together” (Gilson et al., 2011, p2). Furthermore, little social research has been done to understand how information is used. Two decades ago Loevinsohn (1993) was already suggesting that social research was needed on approaches to empowering health managers and planners to use information for decision-making. More recently the importance of drawing on social science concepts and methods to understand health systems has been affirmed (Gilson et al., 2011).

Furthermore, as already stated, the focus has been largely been on formal information in the health information system. Relatively few studies have looked beyond the HIS, at the range of information that managers actually use. For examples of studies that do take this broader perspective, see Damtew et al., 2009; Østmo, 2007; Williamson & Kaasbøll, 2009; Mutemwa, 2006). While these studies are in fact mainly set at district and facility level, they only offer glimpses of the nature of decision-making and information use at this level.

The relatively new field of Health Policy and System Research (HPSR) is offering new approaches and drawing on Social Science perspectives in studying health problems (Gilson et al., 2011). Importantly it promotes work across disciplines to understand health problems

(Bennett et al., 2011). This approach offers new possibilities, yet untapped, for studying the use of information in health management decision-making.

### **1.3 The DIALHS project as the research context**

This research is nested within a larger project - the District Innovation, Action and Learning for Health System Development (DIALHS) project - which offered the opportunity to conduct this research in the field of HPSR. The research approach, interests and priorities of the DIALHS project influenced the framing of this research and the research question. This researcher joined the DIALHS team as a senior researcher in 2010 shortly after its inception, and participated in a range of DIALHS activities (a community mapping process, a review of management processes and practice involving a document review and interviews, the facilitation of a governance initiative), in addition to her PhD research.

The DIALHS project has been described in detail elsewhere (Elloker et al., 2013; Gilson et al., 2014; Lehmann & Gilson, 2014). It is built on partnership between the health departments of the City of Cape Town and the Provincial Government of the Western Cape and the Schools of Public Health at the Universities of Cape Town and the Western Cape, and is based in one health sub-district in Cape Town (the Mitchells Plain health sub-district). It is an innovative action learning project, established in 2010, as a collaboration between health managers and researchers in Cape Town, South Africa to co-produce knowledge about health system strengthening. It seeks to understand leadership and management in the sub-district, and how it is influenced by the district, provincial and national structures, processes and policy environment in which it is located. The specific areas of focus within DIAHLS activities have evolved from the collaboration over time, with every activity being negotiated and agreed with local health managers (in particular the substructure and sub-district management teams).

Two key strands of action learning in the early work of DIAHLS in 2010 and 2011 influenced this research topic and conceptualisation of this research<sup>1</sup>. The first was an exercise of mapping and understanding the management and planning processes in the sub-

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<sup>1</sup> The proposal for this research was accepted in November 2011

district (DIALHS Project, 2010b), and the second was a collaborative community mapping initiative (DIALHS Project, 2010a). Both highlighted the importance of information use in decision-making. The latter also raised questions about how information which was outside of the formal health information system (which could be called *soft or informal information*) could be used in priority setting and planning. Specific facility-level issues were raised: sub-district managers felt that information use was not optimised at the level of facility management, and that use of information for decision-making and planning was particularly limited. In collaborative planning with sub-district managers at the end of 2011, the strategic importance of facility managers as the direct managers of service delivery, programme implementation and the community interface was recognised. The DIALHS project was asked by the sub-district managers to undertake work with the primary healthcare<sup>2</sup> facility managers, to understand and support their management practice to improve service delivery. This provided the opportunity to conduct this research, and it also focused the research specifically on *primary healthcare facility managers within a district health system*.

At a subsequent meeting with the two sub-district managers the perceived problem of poor information use at facility level was further explored. An important question was how to improve ownership of data generated within primary healthcare facilities. In both organisations, the sub-district managers wanted to know how to change the way facility managers perceived the use of data in the so-called Plan-Do-Review<sup>3</sup> (PDR) and supervisory processes. In one organisation, the challenge was to move from a view that information was being used as a stick to punish the facility managers (a “them against us” mentality) to a collaborative approach of thinking together (“let’s look at the data together to see what our challenges are”). In the other organisation, the sub-district manager recognised that her facility managers worked more regularly with the PDR information and targets, but felt that there was still a ceiling to their engagement; this was later expressed as a “stuckness” in conversations about using the PDR data, with facility managers withdrawing from the conversations. The use (or neglect) of formal information in the operational management of

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<sup>2</sup> The term ‘primary healthcare’ is used to denote the primary level of health care, distinct from the Primary Health Care approach which is understood to be a philosophical approach to structuring health services.

<sup>3</sup> The Plan-Do-Review is a management process of planning performance targets, implementing activities to reach the targets, and then regularly re-assessing, or monitoring, progress.

the facilities, and how it shaped the nature of supervisory relationships, was seen to be important by the sub-district managers.

Some of the specific questions that arose in meeting the sub-district managers were:

1. How to support facility managers in recognising that information is important for decision-making?
2. How to introduce monitoring and evaluation tools so that the emphasis is not only on how to use the tools correctly, but also on the value of the information generated and how it can be used to make management decisions?
3. How to restructure meetings and supervisory visits to allow information to be reviewed and used in a constructive way?
4. How to support facility managers in using information to manage their staff?
5. How to enable facility managers and their staff to see beyond the aggregated information, to the individual clients and the communities who are receiving services, and to the benefits of services provided to their health, from a clinical perspective?

## 1.4 Development of the research question

In the initial reading of the health management literature, a number of questions arose which were formative to this research. The work of Williamson and Kaasbøll (2009) was particularly thought-provoking. They challenged the notion that there was *not* a sufficient culture of information, by identifying that primary healthcare facility managers *did* use information in managing service delivery, just not information from the HIS. This raised the following questions:

1. What are the information needs of managers, particularly those concerned with implementation of service delivery?
2. If information from the HIS is not used, where is the information being sourced?
3. What is the nature of the information that is being used?
4. When and how is this information being used, and to what purpose?
5. Why is this information preferred to that within the HIS?

Another set of questions was prompted by reading the work of Mutemwa (2001) who explored the information used by district managers in strategic decision-making. In his reading of the literature, particularly Mintzberg (1973), he too found that managers in general (i.e., not specifically health managers), at all levels of an organisation, often preferred other information sources, and he therefore asked: “*So then, where does the HMIS [health management information system] stand in relation to information from these verbal and other media which the manager favours?*” (Mutemwa, 2001, p20)<sup>4</sup>. This led to the following questions:

1. If information from the HIS is not sufficient to provide for the information needs of facility managers, then what else needs to be done to support their information needs?
2. How can the HIS position itself to support and complement other information sources?
3. What implications does this have for health system strengthening which is concerned with management and health information systems?

Embracing the notion that transdisciplinary approaches have much to offer the study of health problems (Bennett et al., 2011), this research began to consider the theory and evidence-base offered in other disciplines. Such transdisciplinary approaches are promoted in the growing field of Health Policy and System Research (Gilson et al., 2011). Literature in the fields of management and psychology both suggest that management is not the rational process often implicitly assumed in health management literature (Mutemwa, 2001). In psychology, the role of tacit knowledge and intuition in decision-making is described (Hodgkinson, Langan-Fox, & Sadler-Smith, 2008). In management sciences, a range of different models of decision-making are put forward as alternatives to rational processes, such as bounded rationality (Simon, 1979), incremental processes (Lindblom, 1959) and the *garbage can* model (Cohen, March, & Olsen, 1972). Literature on expert decision-making suggests that the use of intuition is one of the characteristics of expertise (Greenhalgh, 2002). This reading paved the way for considering broader notions of what information may be useful in decision-making.

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<sup>4</sup> Mutemwa uses the term HMIS to refer to the information system that draws together epidemiological, health service and health resource information.

Returning to the health management literature, there is empirical evidence that health managers use a wide range of different types of information in decision-making. Some of the information is specifically generated to support decision-making, such as that within the HIS. Other information is produced in the routines of management practice and may be recorded in the form of documents or reports. The literature suggests a divide between that which is formally recognised by the health system and that which it not, using a range of different labels for the latter such as “soft information” (Williamson & Kaasbøll, 2009), “other forms of information outside the HMIS ” (Mutemwa, 2006) or *informal data* (Daake, Dawley, & Anthony, 2004). Important in the context of this research, some information use is promoted and enabled within the health system, and is the focus of investment and development (such as the information in the routine health information system [RHIS] which draws on health service delivery records), while some, found to be useful by managers, is not recognised as part of the desired “culture of information use” (Williamson & Kaasbøll, 2009, p9). This has led to a conceptualisation of *formal information* and *informal information* in this research, with a proposition that the two types of information would be used differently for decision-making, and supported differently by the health support systems.

In recent years, there has been an interest in using systems thinking to better understand health systems and their problems (de Savigny & Adam, 2009). Importantly different parts of the health system are interconnected, and a change in one can affect the others (Plsek & Wilson, 2001), often in unpredictable ways. This means that it is important to understand the system as a whole and also to specifically look at how the interconnecting parts are influencing one another (Marchal et al., 2014; Plsek & Greenhalgh, 2001). The adoption of a systems lens in this research generated another proposition: the health system needs to be understood as a whole, and in terms of interconnected component parts, to understand the influences on what information managers use in decision-making, and how they use it. A corollary proposition is that attention to the health system as a whole, and in terms of interconnected component parts, is necessary to support facility managers in decision-making. This insight led to the final formulation of the research question.

The final research question is:

How do facility managers use information in decision-making, and how is this influenced by the health system context in which they work?

## 1.5 Research approach

In line with the broader DIALHS project, this research responds to the call for new innovative approaches to research on health systems, published in *World Report on Knowledge for Better Health – Strengthening Health Systems* (World Health Organization, 2004), by locating itself within the field of Health Policy and System Research (HPSR). This means that the research is transdisciplinary in nature, as explained Gilson et al. (2011, p1):

*...as HPSR is defined by the topics and questions it considers rather than a particular disciplinary approach, it requires engagement across disciplines; indeed, understanding the complexity of health policy and systems demands multi- and inter-disciplinary inquiry.*

This research draws on concepts and phenomena which have already been researched and described in management science and psychology, and applies them to exploring how health managers use information in decision-making. Furthermore, it adopts a systems lens to understand the action needed to improve management of service delivery, seeing the health system as a system of interconnected parts, all influencing how facility managers do their work of decision-making. It therefore anticipates that the action needed to support facility managers is potentially multi-faceted and interconnected, operating at different levels and on different components of the health system. Because health systems have people at their core (as managers, staff, patients, communities and populations), they are inherently complex (Marchal et al., 2014) requiring attention to relationships and values within the system (de Savigny & Adam, 2009).

As this research was nested within the DIALHS project, a collaborative action learning approach (Bradbury-Huang, 2010) was adopted, based on Rigg's understanding of action research as "a collective process for inquiring into and taking action on projects and practices within their complex, multi-agent contexts" (Rigg, 2011, p15). The collaborative nature of the DIALHS project in general, and this research in particular, are also considered a strength in HPSR (Bennett et al., 2011, p2), which recognises the "benefit from being embedded within a particular context and close engagement with local actors"<sup>5</sup>. This research is

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<sup>5</sup> In policy analysis, an *actor* is an individual, group, institution or state that has influence or power in the decision-making process

collaborative in that the framing of the research question and objectives were negotiated with the sub-district managers in the research setting. Also, four facility managers were co-researchers (also called the *index facility managers* in this research) and a further 17 facility managers in the sub-district participated as the peer group of the index facility managers. They contributed significantly not only to generating data in facilitated dialogues and workshops, but to the iterative cycles of analysis, by making meaning of their experience and of the emerging findings. The *action* component of action learning is understood within the DIALHS project to include reflective practice, the “purposeful critical analysis of knowledge and experience, in order to achieve deeper meaning and understanding” (Mann, Gordon, & MacLeod, 2009, p123). There is an established tradition of participatory action research in health information system research, as evidenced in the work of the Health Information System Project (see Byrne, 2003; Braa & Hedberg, 2001).

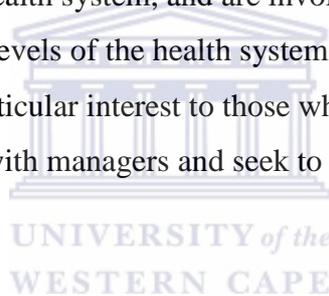
A qualitative research approach was selected and designed as a multiple case study, with three areas of managerial decision-making making up the three cases. This follows the work done by Mutemwa (2001) who used a set of strategic decisions undertaken by district managers as cases in his multiple case study. The choice of design allowed careful consideration and study of the research context as part of the case.

## **1.6 Purpose of the research**

The purpose of this research was five-fold. Firstly, it was to understand and support primary healthcare facility managers in the sub-district of Mitchells Plain in a key aspect of their management practice – their use of information in decision-making - with a view to improving service delivery in their sub-district. Secondly, it was to explore how broader health system processes, such as governance and leadership within the local, district, provincial and national context influenced how they used information in decision-making; this was in order to strengthen support across the different levels of the health system, thereby promoting and enabling effective facility management practice in Mitchells Plain Sub-district. In these first two aspects, the purpose was to contribute towards strengthening the local district health system. Further, the purpose was to contribute rigorous and generic learning, applicable to contexts beyond the local setting. Therefore the purpose was, thirdly,

to understand how information is used to support the key management function of decision-making. Fourthly, the purpose was to explore the value of adopting a systems lens in understanding the management practice of primary healthcare facility managers in a developing country context, and contribute these insights to the literature on health management. Lastly, this research sought to contribute a *bottom up* understanding to the literature on how to strengthen management practice (i.e., from the perspective of facility managers): this might address what system support is required and in doing so, speak specifically to the global debate on how to approach coordinated action for health system strengthening in a developing country context.

While the research is set in a district health system and looks specifically at the decision-making and information use of primary healthcare facility managers, the findings and implications are relevant to all who understand the interconnectedness of the national, district and organisational levels of the health system, and are involved in designing policy, planning and managing within and across levels of the health system – practitioners and researchers alike. This research will be of particular interest to those who are responsible for governance and leadership, those who work with managers and seek to strengthen management, as well as those who work with HISs.



## **1.7 Research setting**

The research site is the Mitchells Plain Sub-district and the Klipfontein-Mitchells Plain Substructure. In this section, a brief overview of the geographical area, its district health management structures and facilities is given. A fuller description and analysis of the management relationships, structures, processes and practices is presented in Chapter 5 - Findings: Understanding the Context, which explores the context of this multiple case study. Significantly, the Mitchells sub-district had been a pilot site for district health information system reform in the early 1990s: for a description of this see Braa and Hedberg (2002); it has a well-established coherent RHIS and there has been a particular interest in using information to support management practice in this site. Further there are committed and able local sub-district management teams, which present the opportunity to study a well-functioning health system.

### 1.7.1 Socio-economic and health status

The geographical area has a population of just over 900 000 residents. As shown in Table 1.1, the 2011 Census recorded a population of 507 237 for Mitchells Plain Health Sub-district, which is an increase of 38% since 2001. The average household size has declined from 4.17 to 3.82 in these 10 years. The population of Klipfontein Health District was recorded as 384 189, which is an increase of 12% since 2001; the average household size declined from 4.31 to 3.96 in these 10 years. Both sub-districts have substantial informal settlements and high levels of unemployment and poverty.

**Table 1.1. Selected socioeconomic indicators for the research site, 2011**

	Klipfontein	Mitchells Plain	Cape Town Metro District
<b>Total population</b>	384 189	507 237	3 740 025
<b>Average household size</b>	3.96	3.82	3.5
<b>% Completed Grade 12 or higher (aged 20 years and older)</b>	37	32	46
<b>% Employed (aged 15 to 64)</b>	68	68	76
<b>% Households with monthly income of R3 200 or less</b>	59	61	47
<b>% Households living in formal dwellings</b>	76	68	78
<b>% Households with access to piped water</b>	83	81	87
<b>% Households with access to a flush toilet</b>	83	84	88
<b>% Households with refuse removal at least once a week</b>	95	91	94
<b>% Households using electricity for lighting</b>	98	92	94

Source: constructed from *The City of Cape Town 2011 Census - Health District Profiles* (2011).

There is a *quadruple burden* of disease with significant mortality from HIV, other infectious diseases, non-communicable diseases and injuries (Groenewald et al., 2008). The top ten causes of death in these two sub-districts in 2006 included: homicide, HIV, TB, lower respiratory infections, road traffic accidents, diabetes mellitus, ischaemic heart disease, low birth weight and stroke. In addition lung cancer was in the top ten causes in Klipfontein sub-district and diarrhoeal disease in Mitchells Plain. Table 1.2 shows a selection of health status and service response indicators for 2011.

**Table 1.2. Selected health status and service indicators for the research site, 2011**

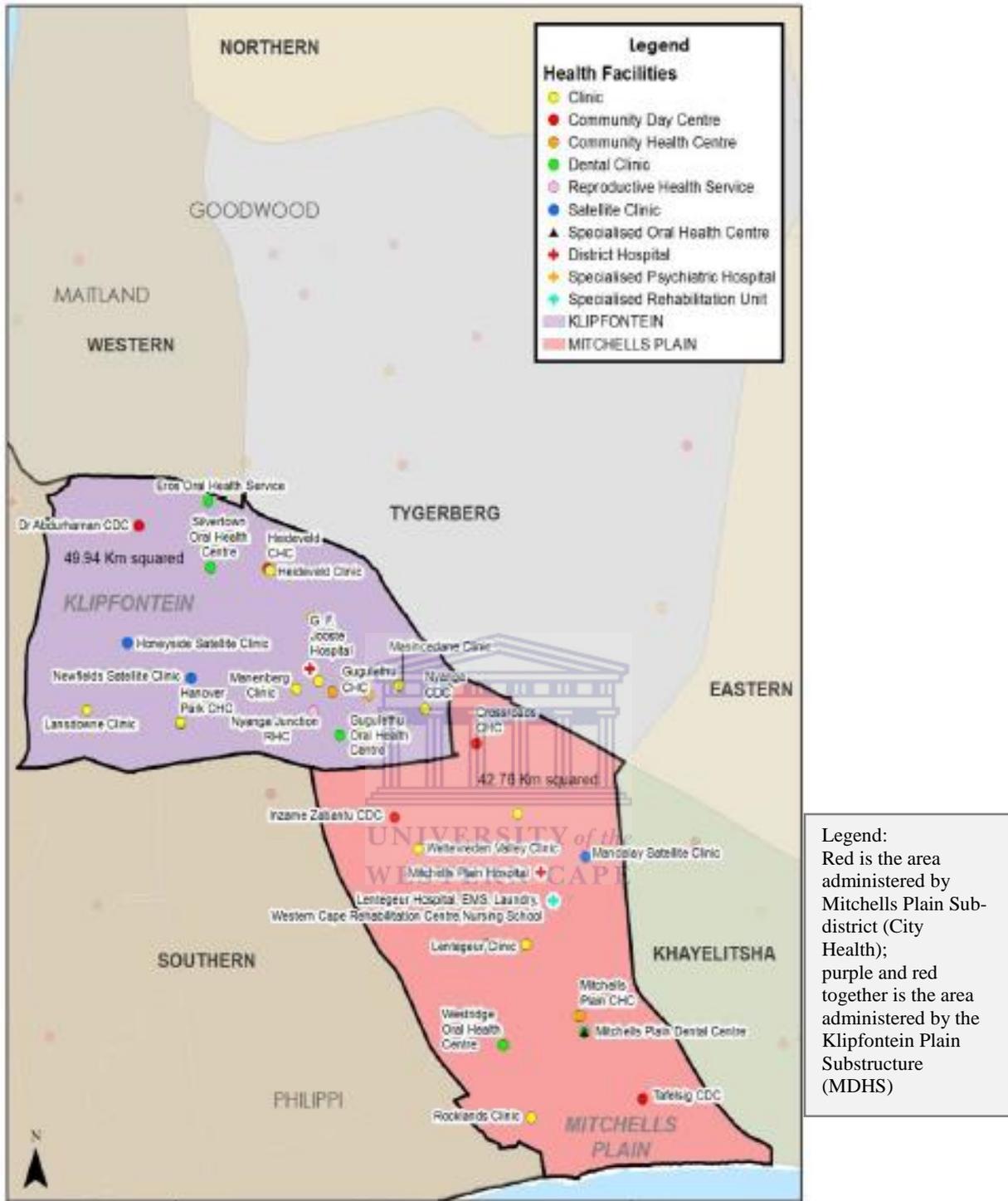
	Klipfontein	Mitchells Plain	Cape Town Metro District
<b>Infant mortality rate per 1000<sup>1</sup></b>	18	17	16
<b>Diarrhoeal deaths &lt;5 per 100 000<sup>1</sup></b>	27	11	28
<b>% Immunisation coverage<sup>3</sup></b>	102	81	88
<b>Condoms per male (annualised)<sup>2</sup></b>	73	63	72
<b>% Cervical smear coverage<sup>2</sup></b>	73	63	72
<b>Couple year protection rate (without condoms)<sup>2</sup></b>	16	23	25
<b>% Teenage birth &lt;18 years<sup>2</sup></b>	5.0	4.8	4.5
<b>Antenatal HIV prevalence (%)</b>	22.3	28.4	20
<b>% Adults &gt; 15 tested (HIV counselling and testing)<sup>3</sup></b>	26.7	21.9	21.5
<b>TB incidence (per 100 000)<sup>2</sup></b>	661	707	667
<b>New smear positive cure rate<sup>4</sup> (%)</b>	87	85	82

Legend: Jan – Dec 2012; <sup>2</sup> Jul 2012 – Jun 2013; <sup>3</sup> Apr – Jun 2013; <sup>4</sup> Jul-Sep 2012

Source: constructed from HIV and TB Plan 2013/2014 (City Health, 2013a) and Joint City Health/MDHS PDR 2012/2013 (City Health, 2013b)

### 1.7.2 Two health authorities and a district health system

Both local and provincial authorities offer primary healthcare services within the research site through two separate organisational structures, so both management structures are described. This dual system is a legacy of the fragmentation of services introduced during the pre-1994 apartheid years. The Mitchells Plain Sub-district (local government) and the Klipfontein-Mitchells Plain Substructure (provincial government) are two geographically overlapping administrative units, as shown in Figure 1.1, each functioning in parallel as unit of a district health system within the Cape Town Metro district. Following the national commitment to decentralisation and defragmentation of health services in the 1990's both authorities successfully established interim sub-districts in the late 1990's with an expressed commitment to developing integrated primary healthcare services, and amalgamating the two structures.



**Figure 1.1. Map of the Mitchells Plain Sub-district and the Klipfontein-Mitchells Plain Substructure**

Source: *Klipfontein Mitchells Plain Substructure orientation guide* (2013, p7)

Political processes have delayed the amalgamation process. While the two authorities have structured means of collaborating at district and sub- district level to plan and monitor service delivery, they still have separate management structures for their two separate sets of facilities in the same geographical area. City Health underwent a restructuring process in 2005 and Metro District Health Services (MDHS) in 2007, with formal appointment of sub-district and substructure managers. The sub-district and substructure management report to separate district level management structures (City Health and MDHS respectively). MDHS reports directly to the Western Cape Department of Health while City Health to the City of Cape Town. In City Health there are 8 health sub-districts, one of which is Mitchells Plain which covers an area of 42.76 km<sup>2</sup> and provides care to 557 063 people (*Klipfontein Mitchells Plain Substructure Orientation Guide*, 2013). MDHS has divided its administration into four substructures, each made up of two sub-districts.

The Klipfontein-Mitchells Plain Substructure is made up of Klipfontein and Mitchells Plain sub-districts. In the Klipfontein-Mitchells Plain Substructure the Klipfontein sub-district adds an additional surface area of 49.94 km<sup>2</sup> and additional population of 487 528 people (giving a total population of just over one million for the substructure). Initially only the geographical area of Mitchells Plain was considered part of the research site although the DIALHS project worked with both the Mitchells Plain Sub-district (City Health) and the Klipfontein-Mitchells Plain Substructure (MDHS) management. However as this research works with the facility managers as a peer group which exists as a functional unit, it made sense to extend the boundary for MDHS to include the whole of the Klipfontein-Mitchells Plain Substructure so that all the MDHS facility managers were included; this is an additional five facility managers. Figure 1.1 shows all the public health facilities in the Klipfontein-Mitchells Plain Substructure, both City Health and MDHS.

### **1.7.3 Types of primary healthcare facilities and managers in the study setting**

This research is concerned with management of the first-level of healthcare services. There are three different types of facilities included: clinics, community day centres (CDC) and community health centres (CHC).

They are defined as follows using the *Klipfontein Mitchells Plain Substructure orientation guide*, 2013:

- *A clinic is defined as an appropriately permanently equipped facility at which a range of Primary health care services are provided. It is open at least 8 hours a day at least 4 days a week.*
- *A community day centre is a facility that is not open 24 hours a day, 7 days a week, but which offers a broad range of PHC services. It also offers accident and emergency care, but not midwifery services or surgery under general anaesthesia.*
- *A community health centre is open 24 hours a day, 7 days a week, and which offers a broad range of PHC services. It also offers emergency and midwifery services, but not surgery under general anaesthesia.*

Table 1.3 lists the facilities which are included in this research. There is one satellite clinic in Mitchells Plain Sub-district, but as this is staffed and managed by the neighbouring permanent facility, it is not considered separately. Likewise there are two reproductive health clinics and oral clinics in Klipfontein-Mitchells Plain Substructure which, although they have dedicated staff, are managed by the facility manager of the larger CHCs. The two district hospitals, although part of the district health system and managed by the Klipfontein-Mitchells Plain Substructure manager, are not included, as they are more complex referral facilities. The specialised psychiatric hospital and rehabilitation unit shown in Figure 1.1 are tertiary health services, and are not included in this research. The City Health facilities in Klipfontein are not included as they form part of a separate unit of the district health system, and the DIALHS project is not in a research partnership with their sub-district management.

As shown in Table 1.3, the primary healthcare facilities vary considerably in staff complement, which is predominantly because of the services offered. Clinics (with 12 - 20 staff) offer mainly preventative services, with limited curative services (children under 12, human immunovirus (HIV) testing and counselling, wellness checks, tuberculosis (TB) diagnosis and treatment, sexually transmitted infections (STIs) treatment, and in some facilities antiretroviral therapy). CDCs (with 24 - 68 staff) are also responsible for adult curative, trauma and emergency care, while the larger CHCs (with 143 - 180 staff) offer a wider range of primary services, which includes midwifery services and in some facilities, oral health and dedicated reproductive services.

Table 1.3 also shows that in the Mitchells Plain Sub-district, City Health has mainly clinics (eight) and only one CDC. In contrast, in the Klipfontein-Mitchells Plain Substructure, there are five CDCs and three CHCs. Both the Mitchells Plain Sub-district and Klipfontein-Mitchells Plain Substructure managers are therefore responsible for similar numbers of facility managers (nine and eight respectively) but the MDHS facilities tend to have much larger staff complements and include 24 hour facilities with 24 hour trauma units and inpatient obstetric care. Also the MDHS manager (i.e., the Director) and the support team are responsible for two district hospitals.

**Table 1.3. Public primary healthcare facilities in Klipfontein and Mitchells Plain included in this research**

Name	Organisation	Geographical location	Type	Number of staff
Tafelsig CDC	City Health	Mitchells Plain	8 hour CDC	35
Crossroads 1 Clinic	City Health	Mitchells Plain	Clinic	8
Crossroads 2 Clinic	City Health	Mitchells Plain	Clinic	12
Eastridge Clinic	City Health	Mitchells Plain	Clinic	14
Lentegeur Clinic	City Health	Mitchells Plain	Clinic	14
Mzamomhle Clinic	City Health	Mitchells Plain	Clinic	20
Phumlani Clinic	City Health	Mitchells Plain	Clinic	10
Rocklands/Westridge Clinic	City Health	Mitchells Plain	Clinic	13
Weltevreden Valley Clinic	City Health	Mitchells Plain	Clinic	18
Mitchells Plain CHC	MDHS	Mitchells Plain	24 hour CHC	180
Crossroads CDC	MDHS	Mitchells Plain	8 hour CDC	60
Inzama Zabantu CDC	MDHS	Mitchells Plain	8 hour CDC	24
Gugulethu CHC	MDHS	Klipfontein	24 hour CHC	159
Hanover Park CHC	MDHS	Klipfontein	24 hour CHC	143
Dr Abdurahman CDC	MDHS	Klipfontein	8 hour CDC	58
Heideveld CDC	MDHS	Klipfontein	8 hour CDC	68
Nyanga CDC	MDHS	Klipfontein	8 hour CDC	35

Legend: CDC Community Day Centre; CHC Community Health Centre

In this setting, with primary healthcare facilities varying in size from 12 to 180 staff, there are both first- and second-level managers. First-level managers are those found in smaller

facilities, who manage their staff directly, while second-level managers work in the larger facilities and manage, at least in part, through heads of department.

## **1.8 Outline of thesis**

This chapter has introduced the topic and traced the development of the research question in the light of the health information system and wider management literature, as well as in relation to questions arising from health service colleagues in the DIALHS project. Chapter 2 - Literature Review explores what is known in the health management literature about management in decentralised health systems, the role of health information systems in supporting management information and the link between information and knowledge. Chapter 3 - Conceptual Framework draws on theory and empirical research from a wider literature (including management sciences, cognitive and social psychology, and health system research) to build a conceptual framework from three major theoretical constructs: the health system context; decision-making; and information and knowledge. Chapters 2 and 3 should be read together for a comprehensive view of the theoretical and empirical literature which informs this research. Chapter 4 - Methods describes the research process in full, including the particular methods used to surface tacit knowledge, and the iterative cycles of data collection and analysis. It also considers the rigor of the study, as well as ten ethical dilemmas which emerged and how they were resolved. Chapters 5 to 9 are five chapters containing the Findings. Chapter 5 – Findings: Understanding the Context describes the context of the research, which in a case study is considered to be part of the case (Stake, 1995; Yin, 1994). It covers the national public and health sector policy environment and the national, provincial, district and sub-district management processes and practices. As the three cases were observed within one setting, this analysis of the local and national context applies to all three. Chapters 6 to 8 are detailed case reports of how information was generated and used in each of the three cases. Chapter 9 – Cross Case Analysis offers a cross case meta-analysis of the scope of decision-making, types of information used, the relationships between formal and informal information and the influence of the health system on what information is valued, generated and used. Chapter 10 - Discussion is the final chapter and is a discussion of the findings of the cross case analysis in relation to other

empirical research and their contribution to theory in the fields of health information systems, public administration and health policy and systems research.



# Chapter 2. Literature Review

## 2.1 Introduction

This literature review follows the purpose set out by Machi and McEvoy (2009) in that it “assembles, *synthesizes*, and *analyzes* the data to form the argument about the current knowledge on the topic” (Machi & McEvoy, 2009, p6). As this research is located in the health sector and aims to speak back to the health policy makers, planners and managers, the literature review focuses on that which is known in the health system literature, with a particular focus on health management and health information systems. In a few instances, studies located in broader management sciences are included, where the health system literature itself has made reference to them. The literature review focuses broadly on three areas of theory and empirical research which are at the centre of this research. The first area is the importance of decentralised health systems, and management within decentralised health systems. This section looks at the challenges and opportunities in management, and the health information needs in a decentralised system. While this research aims to contribute to strengthening management in the broader health system strengthening endeavour, the frameworks for the latter are discussed in the next chapter: the *health system context* has been incorporated into the conceptual framework as a major construct.

The second area covered in this literature review is the role of health information systems in supporting management. This section describes what constitutes a health information system, and gives an historical overview of the development of HISs. This discussion leads to a related section which focuses specifically on the information generated by HISs, the extent to which this information is used and the constraints on HIS effectiveness (often equated with constraints to information use). This updates a review of studies done in the 1980s and 1990s (Gladwin, 2003), focusing specifically on constraints to HIS effectiveness, covered in the literature from 2000 onwards. The section ends by considering the construct of an *information culture*, which is sometimes thought to influence information use.

The third area covered in this literature review is concerned with the use of information, more broadly in health management, looking beyond the HIS to define information, explore its

links with knowledge and consider how information needs might vary across levels of the health system. The section ends with a review of empirical research into the different types of information that are used in health management, including the management of primary healthcare facilities. This provides an important bridge to the next chapter, drawing on these empirical findings to develop definitions of what might be considered *formal information* and *informal information* for use in the conceptual framework. This was in anticipation of exploring what information (and knowledge) is actually used in decision-making, and how this is influenced by the health system context.

While located in the health sector, this research is transdisciplinary in nature. The theoretical constructs which inform it are drawn from a wider range of disciplines and fields, including management sciences, cognitive and social psychology, and Health Policy and System Research. Three major theoretical constructs are used in the conceptual framework: the health system context; decision-making; and information and knowledge. The theory informing these constructs, how they have been applied in health management and some empirical research concerning how they have been applied or researched in health management, are covered separately in Chapter 3 - Conceptual Framework, which should be read in conjunction with the Literature review for a comprehensive view of the theoretical and empirical literature which informs this research.

## **2.2 Understanding management in decentralised health systems**

Decentralised management is at the heart of the district health system, which adopts a Primary Health Care (PHC) approach. Decentralised managers need to be skilled and effective to deliver health services and to coordinate intersectoral action for health needed to bring about the desired improvement in population health and equity outcomes. However not enough is known about this cadre and their training needs in developing country contexts.

### **2.2.1 Why decentralised health systems?**

The WHO defines a health system as “all the activities and actors whose primary purpose is to promote, restore or maintain health” (World Health Organization, 2000b). A health system

operates at different levels which includes the macro (global and national), meso (organisational and local) and micro (individual interaction) levels (Gilson, 2012) and can be centralised or decentralised in structure and processes (Mills, 1994). In a centralised system, the national ministry of health retains all decision-making power and has full control over how resources are distributed and spent; in a decentralised system, various degrees of authority and autonomy in decision-making are transferred to lower levels of government (Mills, 1994).

In the late 1970s and early 1980s, PHC emerged as a philosophy and a strategy to improve population health across countries to ensure more equitable health outcomes (Cueto, 2004; Schaay & Sanders, 2008) and achieve the WHO's vision of "Health for All by the Year 2000" (World Health Organization, 1981). A WHO interregional conference in 1987 (World Health Organization, 1987) identified a version of a decentralised health system, the district health system, as a suitable vehicle for implementing the PHC approach; this was because it enables local planning and management of health services, which can respond to local priorities and needs, identify those most in need and draw together action for health across different sectors.

Despite disappointing health outcomes in the ensuing years, attributed by some to a change in the global economy and a narrowing of the approach to a curtailed package of medical interventions (Schaay & Sanders, 2008), in 2008 the WHO recommitted itself to following a PHC agenda (World Health Organization, 2008b), particularly within developing country contexts, to strengthening the district health system (World Health Organization Regional Office for Africa, 2008; Pan American Health Organization, 2007; World Health Organization Regional Office for Africa, 2008; World Health Organization Regional Office for the Eastern Mediterranean, 2009). A regional conference, "Health districts in Africa: progress and perspectives 25 years after the Harare Declaration", held in Dakar, 21-23 October 2013, recognised the opportunities afforded by decentralised health systems (Community of Practice "Health Service Delivery", 2013).

## 2.2.2 Importance of management in decentralised systems

Health managers have a central role in managing staff, drugs, equipment and infrastructure which are all needed for the delivery of health services (Green & Collins, 2003). They are seen as “essential contributors to the effective performance of health systems” in that they “provide the framework within which health services can be delivered” (Green & Collins, 2003, p68).

Strong district management is required to make a district health system effective in bringing about the desired improvements in health outcomes. A WHO interregional conference in 1987 concluded:

*Despite impressive progress in implementing Primary Health Care in many countries, weakness in planning, organization and management, particularly in districts, represent one of the greatest obstacles impeding health development. This fact emerged from an evaluation conducted by 90 percent of WHO Member States. (World Health Organization, 1987)*

This has led to a recognition since the early 1990s that strengthening management for PHC, within the country and health system context, should be a priority (Cassels & Janovsky, 1991). In its 1990 consultative report “Management development for Primary Health Care: report of a consultation, 28 May - 1 June 1990, Geneva, Switzerland”, WHO identified district managers as playing a pivotal role in coordination and integration of primary health services and interventions (World Health Organization, 1990). It called for supportive organisational structures and an approach to management development which was integrated into broader health system development.

More recently the scaling up of global health initiatives in the late 90s and early 2000s has again turned the spotlight on the importance of strong management in improving health outcomes in low- and middle-income countries (Travis et al., 2004; Hanson et al., 2003). Increased funding and access to resources has not been sufficient on their own to achieve health outcomes, since they depend too on the health system’s “absorptive capacity” (Mangham & Hanson, 2010) and how these resources are managed (Egger & Ollier, 2007).

*The most fundamental barrier to these new resources (increased global funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria, the pharmaceutical Accelerating Access Initiative, the United States HIV/AIDS initiative and the World Bank) reaching the people who need them is the lack of competent management at all levels ... Health systems lack people who have and use the managerial competencies that match their responsibilities. (Filerman, 2003, p1)*

In this current context, the need for strong management at all levels of the health system is recognised (World Health Organization, 2009; Meessen & Malanda, 2014). Management decisions that need to be taken at community, facility and district level have been seen as being more operational in nature, while those at provincial, national and international level are more strategic in nature (Bodart & Sapirie, 1998; Abouzahr & Boerma, 2005). Egger and Ollier (2007, p5) define a district level manager in relation to the role they play and specify three key aspects of this:

- *Plan, support implementation and evaluate health activities (volume and coverage of services within their catchments area)*
- *Manage resources (e.g. staff, budget, drugs, equipment, buildings, information)*
- *Manage external relations and partners - including users of their services.*

### **2.2.3 Management challenges and opportunities**

Not enough is known about health managers in developing countries in terms of competences, qualifications, and job descriptions (World Health Organization, 2009). A study of three African countries (Ethiopia, Ghana and Tanzania) revealed that most managers were health professionals ranging from physicians to medical assistants and nurses, many of whom still did clinical work in addition to their managerial responsibilities; it was also apparent that there was difficulty in assessing the competency levels of these managers (World Health Organization, 2009). This was supported by a recent literature review of management and leadership in developing countries (Daire, Gilson, & Cleary, 2014) which further found that most managers had received little management training.

Managers working within decentralised health systems are often called middle or mid-level managers (MLM). The literature on MLM is therefore relevant in understanding this

management cadre. However a review of the literature on middle level managers across different sectors, in both the private and public fields, in developed and developing country contexts alike, found that there is no agreed definition for this cadre of management (Nzinga et al., 2013). Huy (2001) writing within the corporate setting, defined middle managers as “any managers two levels below the CEO and one level above line workers and professionals” (Huy, 2001, p73). Within a hospital setting, middle level managers have been defined as:

“ [one] *who is directly involved in planning and coordinating the production of services that are specific to their own units, bridging the gap between senior-level management and front-line*” (Nzinga et al., 2013, p4)

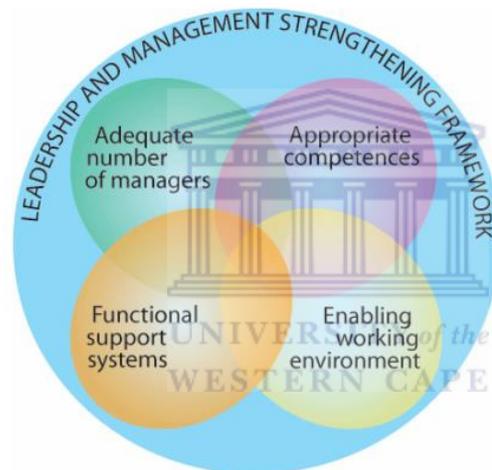
The review found that the most common roles for mid-level managers were in decision-making or problem solving, and as strategists and communicators (Nzinga et al., 2013). Further it identified the potential for this cadre to improve the quality of health service delivery in low and middle-income settings.

Decentralisation of health services through legislative changes is not sufficient to support decentralised management. A study done in Uganda in 2007, years after legislation had been passed in 2000, found the persistence of centralised decision-making and resultant low morale and motivation, which were constraints to effective district management (Egger et al., 2007). In particular top-down prescriptive approaches to planning from national government undermined district relationships with local government. An initiative in The Gambia to improve district level health services used problem solving and *participatory learning-through-doing*, and found improvements in planning and coordination as well as the demand for and use of information for resource management (Conn, Jenkins, & Touray, 1996), but this was constrained by the degree that decision-making remained centralised.

Many attempts to improve decentralised management focus on training of health managers. A framework, developed by WHO (Egger & Ollier, 2007), shown in Figure 2.1, seeks to broaden understanding of what is required to enable good management. This framework, which has been found to be useful when applied in a number of African countries (Egger et al., 2007; Egger et al., 2005; Egger & Ollier, 2007), identifies four inter-related sets of

conditions which need to be addressed at the same time (Egger & Ollier, 2007, p1). These conditions are:

- a. ensuring an adequate number of managers at all levels of the health system (staff);*
- b. building existing managers' own competences (knowledge, skills and behaviours);*
- c. creating better functioning critical management support systems (systems to manage money, staff, information, supplies, etc.); and,*
- d. creating a more supportive or enabling work environment (what is expected from managers; how much authority they have; the rules under which managers work; their relationship with local government and other local actors operating in the health sector; supportive supervision and incentives for improving their performance).*



**Figure 2.1. Conditions for good management**

Source: Egger & Ollier (2007, p1)

There is a shortage of management skills in many developing countries (Filerman, 2003; World Health Organization, 2007). A review by Daire et al. (2014) has identified a number of cognitive, emotional and social competencies) required for management and leadership in middle and low income countries. It suggests that a mix of formal training and on-the-job training, mentoring and support may be effective in developing these competencies. Good practice in competency development includes learning-by-doing, problem-based approaches and peer learning approaches to encourage learning and experience sharing among managers (Egger et al., 2005).

In developing countries, a particular set of challenges exists in human resource management which present as interrelated problems: inequitable distribution of staff, ineffective recruitment and retention of staff, inadequate supervision, poor staff motivation, lack of clear incentives (Lehmann, Dieleman, & Martineau, 2008; McIntyre & Klugman, 2003; Wang et al., 2002). These highlight the need for functional administrative support systems, such as financial systems, and good supervision.

The importance of creating an enabling work environment at the level of implementation has been shown in decentralised health systems (Scott et al., 2014). Relationships can be developed through attention to the micro-processes of governance, with clear understanding of organisational structures and processes, transparent decision processes and negotiation and modelling of values (Scott et al., 2014).

#### **2.2.4 Management's needs of health information in decentralised health systems**

The PHC approach as articulated in *the Alma Ata Declaration* (World Health Organization, 1978) and re-affirmed in the *World Health Report 2008* (World Health Organization, 2008b) requires responsiveness to population and community needs. This is made possible within decentralised health systems, which create the opportunity for local decision-making but this in turn necessitates access to local information (Health Metrics Network, 2008b; Braa et al., 2001; Heywood & Rohde, n.d.).

Health information from health information systems is seen as essential for rational and effective decision-making, as is illustrated by the following two quotations:

*A report of a WHO meeting (1987) clearly links improved management to improved health information systems: 'Of the major obstacles to effective management, information support is the one most frequently cited'. (Lippeveld & Sauerborn, 2000, p1)*

*One of the most critical factors in improving management is the availability of information to support rational and effective decision making. Health and Management Information System (HMIS) design and implementation are therefore*

*seen as an important technical and financial investment to support all levels of the health system.*(Heywood & Campbell, 1997, p63)

The health information required for management varies at the different health system levels (AbouZahr & Boerma, 2005; Health Metrics Network, 2008b; Bodart & Sapirie, 1998; Bodart & Shrestha, 2000). At the level of health facilities, it typically includes information on service delivery coverage and quality, and resource management (drugs and supplies, human resources and finance). At district level this includes population-based data such as demographics and health status.

Routine health information systems, based on health facility reports, are thought to provide the bulk of the health information required at local level (Boerma, 2013). However the health information system literature warns that information on its own does not improve service delivery. Information and an information system needs to be supported by strong management structures and processes (Braa & Hedberg, 2002). The experience in Malawi in the late 1990s saw a newly designed information system precede strengthening of the local operational platform for decision-making, rendering the former ineffective (Chaulagai et al., 2005). In South Africa the implementation of a district health information system as part of health system reform, post-Apartheid, was difficult within a health system that was fragmented and centred on hospitals (Braa & Hedberg, 2002). As the district information began to make local information available, this did not on its own promote a culture of local analysis and use of information - further training was required to support managers who needed to use this information (Williamson & Stoops, 2001). HIS can even have a negative effect on health system performance: the time invested in collecting data may actually reduce time spent on service delivery (Heywood & Campbell, 1997).

## **2.3 Understanding health information systems**

### **2.3.1 What is a HIS?**

Health information systems are designed to provide information that is needed for management, informs decision-making and leads to action (Health Metrics Network, 2008b)

and are therefore important to understand in this research, which explores what information facility managers actually use. Furthermore, health information systems are understood to be an important leverage point in strengthening the whole health system (de Savigny & Adam, 2009); a considerable investment is however needed in their development (Shakarishvili et al., 2011) to monitor and guide action towards meeting the MDGs. This section considers how HISs are conceptualised, provides a historical perspective on the development of HISs with references to some of the major actors in their development and considers the role of HISs in strengthening management. The historical perspective, although not exhaustive, seeks to demonstrate some of the dominant philosophical approaches taken in the development of HISs in developing countries in recent decades.

The definition of a health information system given in the *World Health Report 2003: Shaping the future* (Evans & Beaglehole, 2003) is attributed to a keynote address by Theo Lippeveld (2001) at the inaugural Routine Health Information Network (RHINO) conference in 2001, and informs the thinking of the Health Metrics Network (Abouzahr & Boerma, 2005, p579):

*an integrated effort to collect, process, report and use health information and knowledge to influence policy-making, programme action and research.*

This definition is broadly aligned to others found in WHO technical papers, for example *Health Information Systems Development and Strengthening: Guidance on Needs Assessment for National Health Information Development* (WHO, 2000) and *Framework and Standards for Country Health Information Systems* (Health Metrics Network, 2008b).

This definition does three things: firstly through “integrated effort” it suggests coordinated activity by various role players within a system; secondly it specifies a set of activities (in this case to collect, process, report and use information) and thirdly it includes and thereby gives emphasis to the purpose of a health information system (to influence policy-making, programme action and research). Across the technical and empirical literature, most definitions of health information systems are formulated in terms of these three dimensions: a system, a set of components and a purpose.

In keeping with a set of technical guidelines developed in 1993 (World Health Organization Regional Office for the Western Pacific, 1993), Lippeveld and Sauerborn (2000) argue for what they called a *systems approach* in developing health information systems. This is before the now more mainstream approach to systems thinking in public health, promoted, for example, in the monograph *Systems Thinking* by de Savigny and Adam (2009). For Lippeveld and Sauerborn (2000), as shown in Figure 2.2, it means understanding the information process (of collecting, transmitting, processing and analysing data) alongside a management structure (which provides and manages resources to support the information processes, within the context of organisational rules), which operates across levels of the health system. AbouZahr and Boerma (2005) note that the implied *connected whole* or *organised process* is often not the case, as most country health information systems have developed in a haphazard way. It is however the intention in re-design of health information systems (World Health Organization Regional Office for the Western Pacific, 1993).



**Figure 2.2. Components of a health information system**

Source: Lippeveld & Sauerborn (2000, p16)

The systems approach proposed by Lippeveld and Sauerborn (2000, p17) further locates the HIS within the context of the health system as a whole:

*A health information system cannot exist by itself but is a functional entity within the framework of a comprehensive health system that offers integrated health services, including curative care, rehabilitative care, disease prevention, and health promotion services.*

This understanding is congruent with the more recent systems thinking which sees health information systems as one subsystem within the health system, connecting with the other subsystems such as human resource systems and governance (de Savigny & Adam, 2009).

Another notion of systems which is found in descriptions and definitions of health information systems is that of *sub-systems* operating together to provide all the information needed for a national health system. For example, a HMIS is described in a WHO technical document (World Health Organization, 2000a, p3) as “a subsystem of a health information system devoted to system management. Other subsystems are, for example: epidemiological surveillance and vital registration”. The Health Metrics Network (2008b) discourages the use of the term HMIS but does still work with the idea of sub-systems, seeing them as various *data sources* that need to be coordinated.

The second dimension, the exact activities or components of a health information system which are described in technical papers and investigated in empirical research are broadly similar. Authors such as Aqil et al. (2009) refer to the pivotal technical work by Lippeveld and Sauerborn (2000) in describing health information system components: defining information needs, collecting data, transmitting data, processing data, analysing data and then using information for decision-making, the last being the ultimate purpose of the information system. This work builds too on the 1993 *Guidelines for the development of Health Management Information Systems* (World Health Organization Regional Office for the Western Pacific, 1993). Chaulagai et al. (2005, p379) add a component: information storage in “appropriate formats”. Campbell (2003) uses the base components but refers to them as *steps*. He adds a set of novel processes: these recognise the value of the individual/community interface, bring in self-assessment and peer review, and expand informed decision-making to include follow up of “actionable recommendations”; he also stress the importance of feedback and reporting as a separate step. The Health Metrics Network offer six components which are similarly conceived with addition of HIS input resources (Health Metrics Network, 2008b). This includes HIS policy and planning, human resources and finances for the HIS, ICT and coordinating mechanisms.

The third dimension, that of purpose, is emphasised within the health information literature. There is broad consensus that the aspirational purpose of health information is to inform

decision-making (RHINO, 2001; Lippeveld et al., 2000). This is illustrated in the following quotations:

*A health information system is a tool to help improve management by using available information for decision making. (Mandelli & Giusti, 2005, p3)*

*[There is an implied] relationship between management and information; that the main job of managers is to make decisions and that information is linked to decision making. (Williamson & Kaasbøll, 2009, p2)*

*A sound health information system depends upon organized processes for gathering, sharing, analysing and using health-related data for decision-making. (Health Metrics Network, 2008b, p8)*

Moidu, Wigertz and Trelle (1991) write that the purpose of a health information system depends significantly on how the health information system is defined and what information use is anticipated. Those involved in district HISs have lamented how centralised HISs collect data for retrospective analysis at a higher level (Braa & Hedberg, 2002; Opit, 1987) and cannot support local level managers tasked with coordinating and implementing programmes and service delivery.

AbouZahr and Boerma (2005) suggest that information use should be thought of in relation to health system levels and that the purpose of health information will be different at each level. Different levels of the health system are tasked with different decisions and require different information from the HIS (Abouzahr & Boerma, 2005; Bodart & Shrestha, 2000).

More recently, there has been a paradigm shift to recognise a deeper, more important, purpose of health information systems. More than just informing management decisions, its purpose is to improve health outcomes (Aqil et al., 2009; Health Metrics Network, 2008b). In a keynote address to the 2<sup>nd</sup> International RHINO Conference, Peter Campbell put forward the following measure of HIS performance:

*The HIS measures its ultimate success by informed decisions that lead to action and positive change in the health system or health status, rather than by the quantity or quality of data produced. (Campbell, 2003, p10)*

The strapline for the Health Metrics Network (the first global partnership dedicated to strengthening national health information systems, hosted by WHO and closed in 2012) was “Better information. Better decisions. Better health” (Health Metrics Network, 2008b).

The dimensions discussed thus far are in keeping with what Heeks (2006) has argued is a technocentric approach to conceptualising HIS. He suggests a different approach, seeing them as fundamentally *socio-technical* in nature. He argues that the role of human and social components needs to be incorporated in understanding them. In his work on why health information systems have failed in many developing countries, he suggests that the objectives and values located in the cultural context, and how this manifests in the organisational structure and managerial systems, are important. Braa and Hedberg (2002) have also worked with the social dimension in understanding HIS in terms of actors, data flow and processes of coordination, and in understanding the social context of change:

*All aspects of establishing, running or changing health care information systems also have a direct impact on the organisational structure through recruitment of ‘information’ staff or through changing job descriptions for health workers and managers. Health care information systems are, in other words, deeply embedded in social work practices and are barely separable from the social context of which they are part.* (Braa & Hedberg, 2001, p116)

Others writing in the HIS literature have emphasised the role of understanding the dominant beliefs within actor groups (Asangansi, 2012).

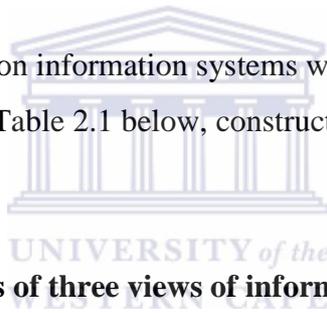
The view of HIS as sociotechnical systems is supported by researchers writing about information systems (IS) more generally in the broader field of management studies, who likewise have challenged the rational technical approach to understanding IS (Avgerou & McGrath, 2007) and have stressed the human element (Lind & Lind, 2005).

*Human activity systems are social systems where people perform actions. Information systems are communication systems and as such a part of a human activity system. An information system is a socio-technical system involving human activities as well as information technology.* (Lind & Lind, 2005, p454)

The social dimension is understood to extend beyond the organisational context to the broader national and international context, and to include consideration of cultural and social factors. For example, in writing about technology innovation, Avgerou (2001, p43) notes:

*First, in such cases it is important to address technology innovation imbedded in, and indeed inseparable from processes of social change. The objective of the study of information systems research should be the ICT-supported social activities of an organization or a network of organizations. Second, analysis should be extended to address the socio-technical process of IS innovation across layers of context, from the international, through the national or regional, to the local organizational. ... Third, IS innovation should be considered a combination of technical/rational and institutional action. Management and IS methodically calculated plans and activities are facilitated or restricted by social, cultural, or cognitive forces, both within and beyond the boundaries of organizations.*

A summary of three perspectives on information systems which have important implications for their development is given in Table 2.1 below, constructed by Iivari and Hirschheim (1996):



**Table 2.1. Practical implications of three views of information systems**

	<b>Technical</b>	<b>Sociotechnical</b>	<b>Social</b>
<b>Priority of design</b>	Technical system	Technical and organizational/social systems [are] equal partners	Organizational/social system
<b>Causes of implementation problems</b>	Poor technical quality Human resistance	Misfit between the technical and organizational/social subsystems	Social inertia
<b>Critical conditions for implementation success</b>	Technical quality	Additionally, fit between the technical and organizational/ social systems	Additionally, social desirability and feasibility of changes
<b>Development strategy</b>	Analysis and design	Sociotechnical design of social and technical solutions	Evolutionary development
<b>Implementation strategy</b>	Empirical-rational	Additionally, normative-educative	Additionally, power-coercive
<b>Role of change agent</b>	Engineer	Facilitator	Arbitrator

Source: Iivari & Hirschheim (1996, p555)

### 2.3.2 An historical perspective on the development of HISs

The need for access to local information for decision-making has been a focus of HIS design and development in developing countries since the late 1990s (Braa & Blobel, 2003) .

Through the 1990s and into the first years of the new millennium, it was assumed that if high quality, relevant information existed, managers would use it in decision-making.

Most health information systems in developing countries were conceived of and developed around vertical programmes for immunisation, child health and family planning (Sauerborn & Lippeveld, 2000; Aanestad et al., 2005). The vertical programme focus is characteristic of the Selective PHC approach (Walsh & Warren, 1979) implemented in the 1980s and 1990s to improve public health. The Selective PHC approach is, however, a limited strategy making use of medical interventions which are organised as high priority programmes to address the highest burden of disease in developing countries (Schaay & Sanders, 2008). It found favour with international agencies such as UNICEF and with foreign donors during the austerity period that followed immediately after the Alma Ata Conference, and which saw the implementation of a Comprehensive PHC approach deferred (Werner & Sanders, 1997). The health information systems that developed in countries such as India, South Africa, Cuba, Malawi and Mozambique in the 1980s and 1990s are described as follows:

*These systems are usually highly fragmented into 10-50 different systems - mostly linked to specific vertical health programs such as tuberculosis, vaccination, HIV/AIDS and different types of services such as hospitals and preventative care. These systems tend to be centralized with little local use of information for action, and the fragmentation between different health programs and services leads to overlaps, gaps and lack of standard definitions for data elements and indicators. (Braa, Titlestad, & Sæbø, 2004, p55)*

In Ghana, the HIS in 1990 was described as “little more than a series of vertical reporting systems” (Heywood & Campbell, 1997, p65). With the emergence of the HIV pandemic, UNAIDS strengthened HIV monitoring and evaluation systems, again perpetuating vertical parallel disease programme information systems (Aqil et al., 2009).

Before 1985, most HIS reform was about technical solutions such as software and data systems (Sauerborn & Lippeveld, 2000). A number of countries began to reform their national health information systems in the late 1980s and early 1990s. Sauerborn and Lippeveld provide an illustrative list which includes Bangladesh, Burma, Bolivia, Cameroon, Chad, Eritrea, Ghana, Niger, Nigeria, Pakistan, Papua New Guinea, Philippines, Swaziland and Thailand. Some of the reforms were stand-alone HIS reforms such as in Pakistan and Chad, while others were integrated into broader health system development, such as in Cameroon (Sauerborn & Lippeveld, 2000). The HIS reform in Ghana (Heywood & Campbell, 1997) and South Africa (Braa & Hedberg, 2002) was part of a commitment to supporting a more integrated PHC approach. The WHO was a significant early role-player in providing technical support to countries to develop, implement and strengthen health information systems and published a number of influential technical papers, for example Neame and Boelen, 1993; World Health Organization, 1994; World Health Organization, 2000a. The main problems identified with the early HISs were duplicated and parallel systems, poor quality data, lack of timely reporting and feedback, and the poor use of information (Sauerborn & Lippeveld, 2000).

The shift towards decentralization of the health system in many developing countries in the late 1980s created a need for health information systems that could provide local data to inform district level managers (Lungo, 2003). A broad participatory action research project, Health Information Systems Programme (HISP), started in South Africa in 1995 and did pioneering work to develop district-based health information systems to support the principles of a comprehensive PHC approach (Braa & Hedberg, 2001). In PHC the challenge is to analyse and use the information immediately and at the same level where it is collected, to ensure responsiveness to community needs (Opit, 1987). HISP's district-based health information system development soon spread to other low and middle-income countries including Mozambique, Tanzania, Ethiopia, Malawi, Nigeria, Mongolia, Cuba, China, India and Pakistan (Braa & Blobel, 2003; Kimaro & Twaakyondo, 2005; Simwanza & Church, 2001). The local analysis and use of data has been the aspiration in much of this work (Anifalaje, 2012; Kimaro & Twaakyondo, 2005; Mukama, 2003; Stoops, Williamson, & Hedberg, 2001). Part of the philosophy of the decentralised approach has been to challenge the *data-led* rather than *action-led* orientation to decision-making (Haga, 2001; Sandiford, Annett, & Cibulskis, 1992). Rather than collect large amounts of information which must be

reviewed to see what decisions need to be taken (the data-led approach), key decisions and actions are decided upfront and inform which data must be collected (the action-led approach) (Aanestad et al., 2005). This has built on the philosophy that data is there to be acted upon (World Health Organization, 1994; Lippeveld et al., 1997; Heywood & Rohde, 2000). The Health Information Systems Programme (HISP) continues to work as a global network managed and coordinated by the Department of Informatics at the University of Oslo, to enable and support countries to strengthen their health systems and their capacity to govern their Health Information Systems in a sustainable way.

Current interest in the MDGs and health system strengthening has mobilised international interest in improving health information systems (Health Metrics Network, 2008b). In Africa the commitment to strengthening health information systems is seen in the *Ouagadougou declaration on Primary Health Care and health systems in Africa 2008* which focuses on nine major priority areas for strengthening, one of which is health information systems (Barry et al., 2010).

An influential technical initiative to support health information systems is MEASURE Evaluation, funded by the USAID, which provides technical support to countries in identifying data needs, collecting and analysing technically sound data, and using that data for health decision-making (MEASURE Evaluation, 2000). MEASURE Evaluation has worked in partnership with John Snow Inc. and has produced a conceptual framework called the PRISM which, in evaluating health information systems, shifts the focus to the performance and determinants of performance (Aqil et al., 2009). They have also supported the development of a decision support system (DSS), again together with John Snow Inc.; this is a module that can be added to an existing RHIS which presents health indicators in graphs and geographic maps to support decision-makers in interpretation (Edwards & Lippeveld, 2004). Between 2000 and 2003 this module has been used in Morocco, Eritrea and Haiti. The Routine Health Information Network (RHINO) was created in 2001 with funding mainly through MEASURE Evaluation. It has members in over 60 countries which include ministries of health, donors, consulting agencies such as John Snow, Inc. and not-for-profit organisations. The goals of RHIS strengthening are “improved health system performance; innovation in health services management, and sustainable improvement in the use of information for decision-making in the health system” (RHINO, 2001). It has

organised a set of international conferences on the use of routine information, focused on issues and innovations in developing countries (2001), quality and use of information at district level (2003), information for action at facility and community level (2006) and measuring and improving Routine Health Information System Performance for Health System Strengthening (2010).

Another initiative, the Health Metrics Network (HMN) was established in 2005 and ran until 2013. Hosted by WHO, it was the first global partnership dedicated to strengthening national health information systems. HMN operated as a network of global, regional and country partners. Global partners include development agencies such as UNAIDS, UNICEF, Global Fund to fight AIDS, Tuberculosis and Malaria, the European Commission and the World Bank, as well as foundations such as the Bill and Melinda Gates Foundation. HMN developed a set of tools to assess and improve health information systems and provided technical support. At the 60th World Health Assembly in May 2007, Member States were urged to use the standards and guiding principles of the HMN Framework in the strengthening health information systems (World Health Organization, 2007b). As of June 2010, 83 countries were using the HMN Framework and tools to strengthen their national HIS (Health Metrics Network, 2010).

Despite the goodwill expressed in building national integrated HIS, there are still calls for parallel *independent* monitoring systems to ensure greater accuracy in immunisation programmes funded by global partners (Lim et al., 2008; Ronveaux et al., 2005). At the other end of the spectrum, there is recognition that strengthening health information systems in low- and middle-income countries requires integration and that they should link with information systems in other social and economic sectors, to provide a more comprehensive picture of social causes and consequences of ill-health (Macfarlane, 2005).

### **2.3.3 Role of health information systems in strengthening management**

The role of health information systems in supporting decision-making has already been discussed in the section above. HISs are often conceptualised as supporting service delivery (Van der Veken et al., 2014; J van Olmen et al., 2012) or health system strengthening across a number of functions, including management (World Health Organization, 2010). Lippeveld

and Sauerborn (2000) have argued that HIS can in fact be an entry point to improving management, and this is supported by empirical research in Nigeria (Idowu, Cornford, & Bastin, 2008), Papua New Guinea (Newbrander & Thomason, 1988) and elsewhere (Chaudhry et al., 2006), which found that HIS can support improved management and healthcare service delivery. The potential for HIS to improve accountability (Anifalaje, 2012; Madon, Krishna, & Michael, 2010) has also been shown.

De Savigny and Adams (2009) suggest that health information, together with governance, are potential leverage points for wider health systems strengthening. They base this argument on their understanding of health systems as complex adaptive systems which can have “tipping points” or places at which small changes can have a much larger system-wide effect.

## **2.4 Understanding the use of health information from HIS**

Evaluations of HISs over the last three decades have often lamented the low use of information from HISs, in stark contrast with their intended purpose, which is to provide information that is used for decision-making and action. A wide range of constraints to HIS effectiveness and information use (terms that are often used synonymously) have been described, and attempts have been made to categorise them. The PRISM framework (Aqil et al., 2009) considers three sets of constraints (seen as determinants of HIS performance): technical, organisational and behavioural determinants. In this section, the review focuses on studies of constraints conducted from 2000 onwards. Information culture has also been implicated as being part of the problem of poor information use, and the chapter ends with defining and exploring this concept.

### **2.4.1 Use of health information from HIS**

The concern across many evaluations of HIS is that health information is not adequately used in decision-making, to design, maintain and improve health services (Aqil et al., 2009; Beesley, Cometto, & Pavignani, 2011; Braa et al., 2001; Chaulagai et al., 2005; Coleman & Garten, 2009; Edwards & Lippeveld, 2004; Health Metrics Network, 2008b; Heywood &

Campbell, 1997); this includes at the district and facility level (Garrib et al., 2008; Muschel, 1999).

As early as 1994, WHO recognised that that information systems often become ends in themselves, rather than a stimulus for decision and action (World Health Organization, 1994). Stansfield et al., (2006) caution that the availability of reliable information does not guarantee its use, or improved decision-making. In their evaluation of a large-scale intervention to improve the HIS in Malawi, Chaulagai et al. (2005) conclude that it is possible to improve HIS and data availability without improving data use.

A number of case studies and evaluations have sought to understand the reasons for poor information use in the context of HISs. Gladwin (1999 in Gladwin, 2003) conducted a detailed review of research published in the late 1980s and throughout the 1990s on information management at facility and district level in low-income countries; it was found that there were extensive problems with data collection, processing, transmission, analysis and use. Similar constraints to HIS in developing countries are presented by Azubuike, Marcel, and Ehiri (1999).

The literature presents considerable overlapping evidence of constraints in three distinct but closely related areas of concern: HIS effectiveness, HIS performance and health information use. The overlap between HIS effectiveness/performance and information use is in part because the purpose of HIS has long been understood to be the use of information for decision-making, as discussed in section 2.2.4; HIS effectiveness on the other hand, has been investigated throughout the 1980s, 1990s and early 2000s and are often framed in terms of the various HIS components: data collection, collation, transmission, analysis and use. HIS performance (Aqil et al., 2009), however, is a relatively new concept that is being promoted within the field of RHIS. Its proponents suggest that it represents a paradigm shift, as it goes beyond noting whether the health information system components function or not, and interrogates how *well* they function (Aqil et al., 2009).

## 2.4.2 Constraints to HIS effectiveness: a review of the literature from 2000 onwards

Because of the overlap in the terms HIS effectiveness, HIS performance and (health) information use, this section of the literature review will consider the evidence for the constraints to all three concepts together and will use the terms *health information use* and *HIS effectiveness* interchangeably, as was the practice in this period.

As evidence from the 1980s and 1990s has already been reviewed (Gladwin, 1999 in Gladwin, 2003; Azubuike et al., 1999), this section focuses on empirical research in developing countries published from 2000 onwards, and includes evaluations of existing HISs, newly implemented HISs (often as part of an action research project, and written up as a case study) and programme-specific HISs. Much of the evidence comes from work on RHIS. The section is organised according a categorisation of the constraints, which serves as sub-headings<sup>6</sup>.

### Impact of HIS system design

Information systems are often fragmented, as they have developed in a haphazard manner responding to a variety of administrative, economic or donor pressures (Health Metrics Network, 2008b; Abouzahr & Boerma, 2005). The Selective PHC approach promoted by UNICEF and UNAIDS in the 1980s to the early 2000s saw the development of vertical parallel programme information systems with a disease focus (Aqil et al., 2009). Information generated to meet the needs of vertical programmes has been found to be inappropriate for use by local managers (Braa et al., 2001).

Data on determinants of health, which is now recognised as crucial to inform preventative and promotive health strategies, are often located in the agriculture, labour, education, water and sanitation sectors and are not integrated with HIS, which make them less accessible; in most countries, mortality data, drawn from birth and death data, are not collected by health

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<sup>6</sup> A limitation of this approach is that it does not separate out the lessons learnt from evaluations of systems in different stages of development.

but by internal registration offices (Abouzahr & Boerma, 2005), making this information similarly less accessible for use in the health sector.

Even when care has been taken in the design of health information systems, this has often been done by technical information experts who are not familiar with the roles and responsibilities of data users on the ground, resulting in a mismatch - which has been referred to as *the dichotomy of action and data people* (Lind & Lind, 2005). A study of the district HMIS<sup>7</sup> after health sector reform in Kenya (Odhiambo-Otieno, 2005b) suggests that one of the problems encountered was that key district staff were not involved in the development and implementation of the district HMIS and that consequently, it did not support strategic and operational management functions. Similarly an evaluation in Tanzania (Kimaro & Twaakyondo, 2005) found that district managers and staff were not involved in the system design process, and that most of the information generated through the HMIS<sup>8</sup> was not relevant to district and facility decision-making. Lack of usefulness of data was found to be a significant problem in a multi-country study promoting data use (Wilkins et al., 2011).

### **Factors related to processes of collection, collation and transmission**

A lack of confidence in quality of data in resource-limited settings has constrained their use. Large multi-country immunisation evaluations have compared facility-based immunisation data with community surveys and found large discrepancies (Lim et al., 2008; Ronveaux et al., 2005) suggesting that national HIS data is not good enough for monitoring global immunisation campaigns and country reimbursements. A survey of national HIS champions and health, finance, telecommunications and statistics representatives in Kenya, Rwanda, Tanzania, Uganda, Ethiopia and Malawi found that, though a large amount of data was collected, participants were concerned that the poor quality of this data limited its use (Coleman & Garten, 2009). A review of the Prevention-of-Mother-to-Child Transmission programme in all 316 clinics and hospitals in three districts in KwaZulu-Natal in South Africa in 2007 (Mate et al., 2009), found that data elements were reported on 50.3% of the

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<sup>7</sup> HMIS is used in this research to refer to the system that holds both health service and health administration information.

<sup>8</sup> HMIS is used in this research is equated with the district health information system.

time and were *accurate* (i.e., within 10% of reconstructed values) 12.8% of the time, which meant that the information was not sufficient to monitor programme performance or inform corrective action. In a study to assess the quality of data in 89 antiretroviral treatment clinics in Malawi, it was found that while many sites were able to generate complete data summaries, the accuracy of facility reports is not yet adequate for national monitoring (Makombe et al., 2008).

Data quality is undermined by deficiencies in health information production (collection, collation and transmission). A survey of the quality of vaccination monitoring programs in 27 countries found lack of procedures for storing forms and for handling late forms (Ronveaux et al., 2005). A process evaluation on immunisation in Mozambique found over-reporting in collating data from tally sheets to facility reports to district reports (Mavimbe, Braa, & Bjune, 2005); several factors were associated with quality of data, including a higher patient volume, longer experience, having a dedicated recordkeeping clerk and more supervision. A study on routine data in KwaZulu-Natal (Garrib et al., 2008), which found that 25% of data were outside expected ranges without an explanation provided, also found that data collection and collation was viewed as burdensome by staff; checking the completeness and accuracy of the data submitted was rarely done on account of lack of time. In Kenya, a descriptive cross-sectional study was undertaken in three districts (Odhiambo-Otieno, 2005b) and found that information was 30% accurate, 19% complete, 26% timely and 72% relevant; contributing problems included inadequate staffing and training, working space, storage space, stationery and a lack of management support. In Malawi, Chaulagai et al. (2005) report on problems in reporting, recording and use of definitions. An evaluation of infectious disease surveillance systems in Tanzania (Nsubuga et al., 2002) also noted a lack of standardised case definitions, as well as inadequate supplies of data forms. Limited computer infrastructure was noted in Cameroon (Kamadjeu, Tapang, & Moluh, 2005) and inconsistent availability of HIS forms and manuals in Uganda (Kintu et al., 2005). Other empirical findings of factors contributing to poor data quality have included: the lack of timeliness, simplicity, flexibility and acceptability (Wilkins et al., 2011); and poor data flow (Braa et al., 2001). There is, however, also encouraging evidence that in some settings good data quality is emerging. For example in 2007, a data verification bottom-up audit in Sofala province in Mozambique (Gimbel et al., 2011) validated the quality of HIS data by comparing three key indicators (antenatal care, institutional birth, and diphtheria, pertussis and tetanus [DPT] immunization); this was

undertaken with population-level surveys over time, and found good concordance from facility clinical registries to monthly facility reports, and community prevalences, providing evidence that structured supervision can be effective in improving data quality.

### **Factors related to processes of analysis and use**

Deficiencies in health information use of data (analysis, dissemination and use in planning) also undermine the effectiveness of HIS. Nsubuga et al. (2002) found that prevalences, incidences and trends were often not calculated, and less than half of the facilities received supervision or feedback. In rural KwaZulu-Natal, South Africa, Garrib et al. (2008) found that despite a good understanding of the data collection and collation process, there was little analysis, interpretation or utilisation of data at facility level. Feedback of information from district to facilities was rarely done, raw data rather than indicators were presented in charts in facilities, and there was little understanding of the applicability of information for facility or programme management. Poor feedback is a common theme from province to district and district to facility (Braa et al., 2001; Garrib et al., 2008; Coleman & Garten, 2009; Gimbel et al., 2011).

Numeracy skills have been found to be weak in facility level staff in South Africa (Williamson & Stoops, 2001; Nicol et al., 2013). Odhiambo-Otieno (2005b) found that there was too much data collected at district level, making analysis impossible. In Tanzania, Kimaro and Twaakyondo (2005) found that most of the health workers failed to understand the purpose of collecting data and there was little evidence of use of information at facility or district level. In Malawi, a programme to redesign and implement a HMIS<sup>9</sup> was evaluated after four years (Chaulagai et al., 2005). While data availability and quality had improved considerably, there was little improvement in use of information in rationalizing decisions. A case study in Mozambique (Braa et al., 2001) found that, even when high immunization drop-out rates were charted, no action was initiated because of a shortage of analytical and interpretative skills and lack of procedures in place for using the information. While the data collection and processing was adequate, the system was “an upwards reporting system”, with little information use at district level, and suboptimal use at provincial level. In Uganda,

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<sup>9</sup> This research equates a HMIS with a RHIS that holds both health service and health resource information.

using information to inform decisions proved too difficult for facility managers and so district or national level staff set targets instead (Gladwin, 2003).

A number of papers report that staff are not adequately skilled in data use (Odhiambo-Otieno, 2005b; Braa et al., 2001; Chaulagai et al., 2005; Kamadjeu et al., 2005) and some note the need for ongoing training of personnel. The training that is practice-based has been found to be more valuable than theoretical training (Chaulagai et al., 2005). In some instances there is poor skills transfer within clinics arising from high staff turnover (Williamson & Stoops, 2001; Kamadjeu, et al., 2005). However an evaluation of HISP training initiatives (Williamson, Stoops, & Heywood, 2001) found that even where skills were acquired, staff found it difficult to improve their practice, because of poor organisational infrastructure and lack of management support.

### **Impact of context**

Sauerborn (2000) recognises that information use in decision-making is constrained by social and political factors. This is supported by Avgerou (2001) who asserts that both the international and national context of the health information system has a bearing on information use. Stansfield et al., (2006) suggest that policy makers are most likely to use information when it supports a preferred government direction.

In Malawi (Chaulagai et al., 2005), the expected health sector reform was not fully realised and impacted on the ability of managers to use information in rational planning and management of health services. Similarly in Tanzania (Kimaro & Sundeep, 2007) the implementation of the HMIS<sup>10</sup> was undermined, as it was not adequately aligned with concurrent decentralization of the health system. Relationships with donors have been found to make a new HIS unsustainable (Kimaro & Nhampossa, 2005) and to introduce fragmentation in design and information flow (Aanestad et al., 2005). Braa and Hedberg (2002) found that the structural legacy of apartheid in South Africa influenced the design priorities in health information system development. In South Sudan, the uncertain political

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<sup>10</sup> This research equates a HMIS with a system that collects health service delivery information.

environment during the post-conflict period undermined the use of detailed human resources assessment in service planning because of the ...

*inability of the concerned administration to make decisions based on evidence, the heavy political constraints faced by decision-makers, and the proliferation of external and internal agendas that compound decision-making.* (Beesley et al., 2011, p6)

Poor use of information in Malawi (Chaulagai et al., 2005) has been linked to data not being adequately disseminated to the wider socio-political pressure groups, and a lack of accountability throughout the system. Aanestad et al. (2005) also show how an intervention to integrate the fragmented HIS played out differently in India, compared to Mozambique and Malawi, because in India, local authorities had more executive power and were actively involved in deeply political processes of negotiation around the redesign of the HIS.

### **Impact of organisational factors**

Empirical research suggests that organisational factors impact significantly on HIS effectiveness. For example, Heeks (2002, 2006) has identified a set of organisational factors, often not incorporated in the design, which he refers to as the “design-actuality gap”. Based on experiences of HIS failure in central Asia, Ecuador and the United Kingdom, he identifies constraints in HIS implementation related to organisational technology, data processes, staffing and skills, management systems and structures, and the objectives and values through which the culture and politics of the organisation and system are expressed.

In developing countries in Africa organisational factors have also been found to impact on HIS effectiveness and information use. Uncertain governance (Beesley et al., 2011) was found to undermine information use in South Sudan. In Tanzania, constraints relating to the HIS were found to be intertwined with the health management and service delivery systems (Kimaro & Sundeep, 2007). For example, district managers did not have sufficient authority to be able to make meaningful decisions; they were financially dependent on donors and there were no incentives in the management processes to use information. Also, the curative focus in service delivery meant that information systems were not valued. In another study in Tanzania, lack of motivation and ownership associated with low salaries, lack of incentives, poor working conditions and heavy workloads were obstacles (Kimaro & Twaakyondo,

2005). Chaulagai et al. (2005) note that in Malawi, information use was limited because of a lack of accountability within the health system hierarchy, and to the community; they also argue that a lack of performance management and incentives, and inadequate human resources to manage and use data and to manage the health services were influential factors. The position of the HIS in the organisational structure was also found to impact on health information use: the low status, given to staff working in HIS, limited their ability to advise and support managers. An intervention to improve the HIS in Uganda (Gladwin, 2003) was not successful because of lack of alignment in a partially implemented decentralised management structure, the existing management style, tools and processes and the lack of support for training and supervision. Other studies in South Africa, Kenya and Tanzania have emphasised the role played by factors such as lack of supervision, management and leadership (Kamadjeu et al., 2005; Odhiambo-Otieno, 2005a; Nsubuga et al., 2002).

While the organisational structure impacts on the HIS, the reverse also holds as the two are intertwined (Braa & Hedberg, 2001):

*All aspects of establishing, running or changing health care information systems also have a direct impact on the organisational structure through recruitment of 'information' staff or through changing job descriptions for health workers and managers. Health care information systems are, in other words, deeply embedded in social work practices and are barely separable from the social context of which they are part. (Braa & Hedberg, 2001, p116)*

A cross-country comparative analysis of the current reporting systems for administrative health data in Mozambique, Tanzania and in the state of Andhra Pradesh in India found that organisational values have an impact (Aanestad et al., 2005) and are often not explicit. Piotti (2006) identifies how informal institutional constraints, such as little value given to recording information, counter the explicit institutional rules and undermine the effectiveness of HIS. The values of various professional and non-professional groups in the organisation are sometimes in conflict (Heeks, 2002, 2006).

Organisational culture is another factor. Chaulagai et al. (2005) identify the inhibiting influence of a punitive management culture. Many studies identify the lack of a *culture of information use* as a significant constraint to HIS effectiveness (Anifalaje, 2012; Asangansi,

2012; Cibulskis & Hiawalyer, 2002; Egger et al., 2007; Egger & Ollier, 2007; Karuri, Waiganjo, Orwa, & Manya, 2014; Ndabarora, Chipps, & Uys, 2013b; Simwanza & Church, 2001; Williamson & Stoops, 2001). This is probed more in the next section 2.4.3.

The historicity of past experience of the organisation also impacts on new initiatives. In a cross-national comparative analysis of the health information systems in Mozambique, Tanzania and the state of Andhra Pradesh in India, Aanestad et al. (2005, p5) demonstrated how pre-existing organisational and institutional arrangements limited the implementation of new systems: “*earlier solutions, entrenched routines, prevailing perceptions and social institutions constitute and solidify existing practices*”.

### **Individual level constraints**

A set of factors acting at the level of the individual data collectors and users have been proposed as determinants of HIS processes and performance (Aqil et al., 2009). Poor knowledge of the RHIS and their usefulness contributes to poor quality data and poor information use (Kamadjeu et al., 2005; Odhiambo-Otieno, 2005b). Staff motivation also impacts (RHINO, 2003) together with attitudes to managerial work and to the use of information (Galimoto, 2007). In Uganda, perceived self-efficacy of facility managers, understood as having the confidence to carry out data collection, collation and analysis, directly influenced the use of RHIS information (Hotchkiss et al., 2010).

### **2.4.3 Information culture**

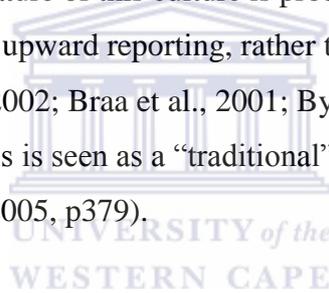
#### **The relevance of information culture to HISs and information use**

The interest in information culture in the mainstream HIS literature is borne out by how HISs understand their purpose - to provide information for decision-making. The use of information, and the culture supporting its use, is therefore of paramount importance. Practitioners and researchers working on RHIS recognise the value of actively shaping information culture (Health Metrics Network, 2008b; RHINO, 2001). Negative staff attitudes are seen to be detrimental to data quality (Health Metrics Network, 2008b). Research has shown that promotion of a culture of information improves health workers' and managers'

confidence and competence in tasks required to manage and use information; in addition, their motivation and perceived self-efficacy, leads to better data use (Hotchkiss et al., 2010).

There are many calls to build an local information culture to improve HIS effectiveness and sustainability (Williamson & Stoops, 2001; Kimaro & Nhampossa, 2005; Nyamtema, 2010; RHINO, 2001; Odhiambo- Otieno 2005; Mukama, 2003). Furthermore, the lack of information use in decision-making has been attributed to the absence of an information culture (Anifalaje, 2012; Asangansi, 2012; Cibulskis & Hiawalyer, 2002; Egger & Ollier, 2007; Egger et al., 2007; Karuri et al., 2014; Ndabarora, Chipps, & Uys, 2013b; Simwanza & Church, 2001; Williamson & Stoops, 2001); some identify this to be particularly at the lower levels of the health services system (Braa & Hedberg, 2001; Lippeveld, 2001).

Rather than a lack of information culture, some researchers propose that there *is* an information culture but that the nature of this culture is problematic. They describe a data collection culture with a focus on upward reporting, rather than local use of information to inform action (Braa & Hedberg, 2002; Braa et al., 2001; Byskov & Olsen, 2005; Garrib et al., 2008; Kamadjeu et al., 2005). This is seen as a “traditional” approach which is “deeply rooted in the system” (Chaulagai et al., 2005, p379).



### **Defining information culture**

Curry and Moore (2003) rightfully point out that the term information culture, though frequently used in HIS literature, is often not clearly defined. At times it is equated directly with information use (Williamson et al., 2001). According to Pettigrew and Pettigrew (1979), culture comprises collectively accepted meanings which enable people to make sense of their reality (as well as beliefs and rationales used to legitimate an action. Schein (1985, in Curry & Moore, 2003) emphasises the subconscious aspects of information culture in his definition, which is of shared, taken-for-granted, implicit assumptions.

Writing about information systems in the broader field of management, Martin, Lycett and Macredie (2003) suggest that the notion of *shared meaning* is common to most of the literature on organisational culture. They identify three variants of shared meaning: first, as seen for example in the work of Walsham (1986, in Martin et al., 2003), it is the common

interpretation and understanding of issues such as organisational vision and the value of information; second, as seen in Davenport (1994, in Martin et al., 2003), it is common language and terminology, a definition of terms and expressions so that meanings can become shared through dialogue; third, as seen in the work of Pan and Scarborough (1999, in Martin et al., 2003), it is behaviours enacted through dialogue. Martin et al. (2003) identify that information culture has both informal and formal elements. The informal elements relate to shared meanings and include beliefs, values and informal behaviours while the formal elements are the formalised systems, structures, processes and procedures which include the technical IT system. They develop a conceptual framework for analysing information culture, which draws on both formal and informal elements.

Like Martin et al., Curry and Moore (2003) propose a definition of an information culture which includes the use of IT:

*where information forms the basis of organizational decision-making and Information Technology is readily exploited as an enabler for effective Information Systems.*  
(Curry & Moore, 2003, p94)

Zheng (2005) agrees that information culture can include technology, but stresses that it exists too even where a technical system is not in place (Zheng, 2005, p3):

*technology is part of the resources human beings draw upon to shape their information culture. How technology is used reflects, and is at the same time constrained, by the information culture within which it is located. On the other hand, information culture exists with or without information technology.*

The following definition in the RHIS literature does not include technology, but does draw on what Martin et al. (2003) consider to be formal elements, in that it refers to the policy and management environment, as well as the informal elements of experience and attitude (RHINO, 2001, p7):

*Information culture relates to the policy and management environment and the incentives to use information for decision-making, as well as to the experience and attitudes of managers and planners with respect to the role of information in improving health system performance.*

In the HIS literature, the understanding of information culture is implicitly concerned with the use of formal information, unless otherwise stated. In empirical research in primary healthcare facilities in South Africa, Østmo (2007) and Williamson and Kaasbøll (2009) have challenged this prevailing understanding, finding instead that a strong information culture exists at local level, based on informal information and tacit knowledge. Because this is not the officially sanctioned formal HIS, it is often not recognised by higher level managers or researchers. Østmo proposes that a definition of an information culture at facility level should recognise the local and tacit knowledge alongside formal information processes (Østmo, 2007, p129):

*Translated into the context of facility management 'information culture' would include local and tacit knowledge, data collection and information use in the health work practice that is not visible in the formal information collection and evaluation process. Power distribution and (lack of) decision-making power for the facility managers would also have to be considered when assessing the information culture at facility level.*

### **How to promote a culture of information use**

Curry and Moore (2003) posit that information culture has to be supported by the organisational culture. They suggest that, when the philosophy and practice of an information culture become the norm, it becomes embedded in an organisational culture, and it then becomes self-supporting. In writing about the implementation of HIS in Malawi, Chaulagai et al. state that a culture of evidence-based decision-making is established when “collection, analysis and use of information becomes fully accepted as part of the culture in the entire health sector” (Chaulagai et al., 2005, p337).

Bloor and Dawson's approach (1994, in Curry and Moore, 2003) suggests that that organisational culture is determined by the dynamic interaction of a number of factors. They suggest that the cultural system of shared values and beliefs of the people in the organisation interacts with the *operating system*, which consists of organisational infrastructure (both technology and staff), professional culture and environment, the historical context, external organizational environment, and societal expectations, norms and values.

Most writing in HIS literature is concerned with how to promote the use of formal information from the HIS. Attention is given to the policy and management environment, including incentives for using information for decision-making (RHINO, 2001; Edwards & Lippeveld, 2004) and ensuring that management and information systems are adequately resourced at each level in the health system (Kimaro & Twaakyondo, 2005). For meaningful information use to be sustained at district level, authority must be decentralised to districts and facilities (Østmo, 2007; Williamson & Kaasbøll, 2009).

The actual use of information in decision-making is seen to create more demand for information, and to actively reinforce the culture of information use (Nutley & Reynolds, 2013). This is also the case when information is used for transparency and accountability (Health Metrics Network, 2008b). In particular, managers need to model the use of information to subordinate managers and staff, communicating through their actions that information is needed and relied upon (Kimaro & Twaakyondo, 2005). Feedback of information down the health system is crucially important (Health Metrics Network, 2008b; Campbell, 2003), as is attention to how the information is presented, so that it is accessible and interpretable to the target users (Health Metrics Network, 2008b). Campbell (2003) emphasises that follow up of evidence-based decisions to see whether they have been implemented is another factor to promote ongoing information use, again demonstrating through action that information use is important. Some stress the importance of senior managers in modelling and promoting information use (Health Metrics Network, 2008b, p9):

*If senior managers fail to promote evidence-based decision-making and the use of information for transparency and accountability then a culture of information is unlikely to be fostered. It is therefore crucial to examine the perceptions, attitudes and values of senior managers and other organization members in relation to information- related functions.*

In contrast Kimaro and Twaakyondo (2005) suggest that a key element in promoting information use is working across levels of the health system because of the interdependence of information use across these levels. Further, they argue that, a top-down approach of institutional mandate to support the use of information backed by political and managerial commitments, needs to be complemented by a participative bottom-up approach, which

fosters participation and ownership of locally generated information (Kimaro & Twaakyondo, 2005, p196):

*Both participative bottom-up and top-down HIS design approaches (Mwangu, 2003) are required to create a sense of ownership of the HIS at all levels as well as to help to build culture and skills that give importance to information use for local action. By learning through past problems, and through regular training, people can attain appropriate skills whereas through participative processes, peripheral workers can be motivated and given needed confidence on what they do. However, both political and managerial commitments are needed to create appropriate information use and IT policies, working environment and procedures, and human capacity development strategy as well as allocating timely resources.*

The PRISM tools developed by MEASURE Evaluation to enhance the performance of RHIS gives the following operational definition of organisational promotion of a culture of information: “an organization having the capacity and control to promote values and beliefs among its members to promote collection, analysis and use of information to accomplish its goals and mission” (Hotchkiss et al., 2010, p5); this suggests that organisations can have control in this. In contrast (Zheng, 2005, p3) maintains that control of information culture is not possible:

*... information culture cannot be ‘created’ or ‘established’ [32, 34]. It has always existed, as one dimension of culture, national or organizational. Information culture can be conceptualized at multiple levels of society, institutions, and individual actions. It is deeply rooted in historical and social settings, yet is constantly evolving over time. Information culture of an organization can be cultivated, developed, or shaped, subject to appropriate management and institutional formulation.*

In the PRISM tools, the organisational promotion of a culture of information is measured by five dimensions (Hotchkiss et al., 2010, p1): (i) data quality; (ii) evidence based decision-making and accountability; (iii) reward mechanisms for good work; (iv) the use of information; and (v) efforts and activities to change things for the better. The approach of Curry and Moore (2003) to what determines a healthy information culture is broader, including communication flows that reflect the complexity of formal and informal communication. Two-way communication allows downward communication of managerial

decisions and upward participation in decision-making. Further, horizontal communication flows are understood as important to enable effective information sharing and co-ordination of activities. Curry and Moore also consider cross-organisational partnerships, allowing different functions and departments to engage in collaborative work. Trust is seen as important in making information accessible.

## 2.5 Use of health information in decision-making

This section, while making some reference to the HIS literature, also looks beyond it to consider broader notions of what is considered information. The dominant view of health information as systematically collected, quantifiable information is addressed, but also the view that health information includes descriptive, qualitative elements.

### 2.5.1 Defining information

In the field of Information Communication Technologies (ICT), the building blocks of information are understood to be data (Porat, 1977). Data is the term for raw facts, observations or experiences. On their own and out of context, they have little meaning. Porat (1977, p7) writes:

*To organize data into information, one needs to superimpose order: a system of logic, a system of thought, a system of measurement, a system of communication.*

Hicks, Dattero and Galup (2007) review how information has been understood variously in the field of knowledge management as:

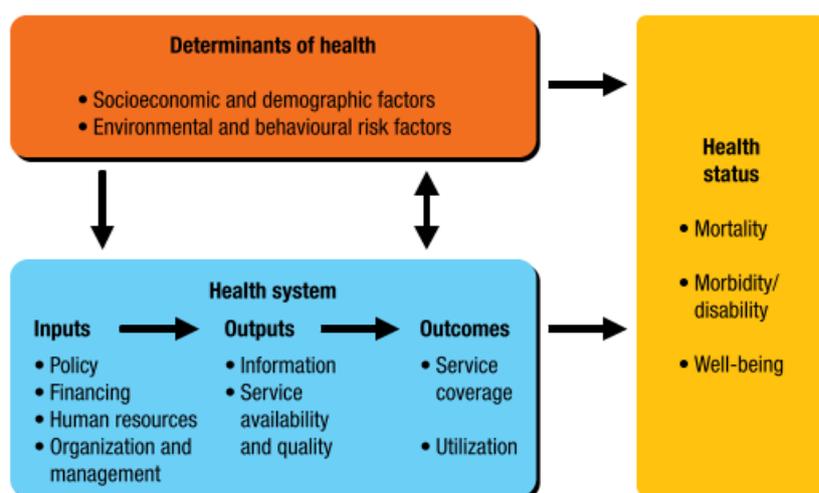
*data with special relevance and purpose (Drucker, 1995), data that makes a difference (King, 1993), data in context (Galup et al. 2002), and a result of analyzing and interpreting data that carries meaning (Bourdreau and Couillard, 1999).*

In the early HIS literature (Moidu et al., 1991), information has been understood as data with meaning; the meaning is derived from the context and from implicit relationships demonstrated between data. This understanding persists in later technical HIS documents

with information described as “a meaningful collection of facts or data” (Lippeveld & Sauerborn, 2000, p2).

## 2.5.2 Defining health information

In most HIS technical documents produced by WHO and other stakeholders, health information is often not defined but is implicitly understood to be the formal quantifiable information which is gathered, collated and stored within the HIS (see the Western Pacific Region of WHO definition of health information for an exception to this in World Health Organization, 2008a). The Health Metrics Network’s understanding of health information (2008b) is found in the domains and sources of data set out for health indicators, as shown in Figure 2.3. The three domains are: firstly, determinants of health (defined as “the socioeconomic, environmental, behavioural, demographic and genetic determinants or risk factors” (Health Metrics Network, 2008b, p20); secondly, health status (which includes mortality, morbidity and disability information); and thirdly, the health system (inputs and their processes such as resources and policy; and outputs such as service coverage and utilisation). Sources are listed as: censuses, civil registration, population surveys, individual records, service records and resource records. This is a broad understanding of health information which spans not only the information that is collected by the health services in terms of health services rendered, and the resources required for this, but also information that is collected by other sectors which speaks to health determinants and health outcomes.



**Figure 2.3. Domains of measurement for health information systems**

Source: Health Metrics Network (2008b, p20)

Non-quantifiable information is often neglected, and possibly undervalued in HISs:

*The health information system is heavily biased towards quantitative data - descriptions of health status and mortality of populations over time, analysis of causation of health problems, quantification of associations between health outcomes and risk or protective factors, and assessment of the effectiveness of public health interventions. (Abouzahr & Boerma, 2005, p579)*

The subset of formal quantifiable health information has dominated the HIS research agenda. Much has been written on health information and its use, but most of this concerns the information produced by the national and district RHIS (see section 2.4). Some empirical work has also considered health information from community-based information systems (March, 2000; Byrne & Gregory, 2007).

The work of Mutemwa (2006), Williamson and Kaasbøl (2009) and Damtew et al. (2009) stands out as having worked with a broader concept of what constitutes health information. They have approached health information by looking at what is used in decision-making in the health sector. Mutemwa (2006, p40) speaks of “other information forms outside the formal HMIS in the district health system”. Others have begun to create labels for this and write of *informal information* (Williamson & Kaasbøll, 2009), *soft information* (Williamson & Kaasbøll, 2009), *data from informal sources* (Daake et al., 2004). Williamson and Kaasbøll also use the term “informal information system” in describing the information that lies outside the formal HIS.

The importance of taking a broader view of information is supported by March who, in writing in the broader management field about organisational decision-making, suggests that conventional notions of information are too limiting (March, 1982, p97):

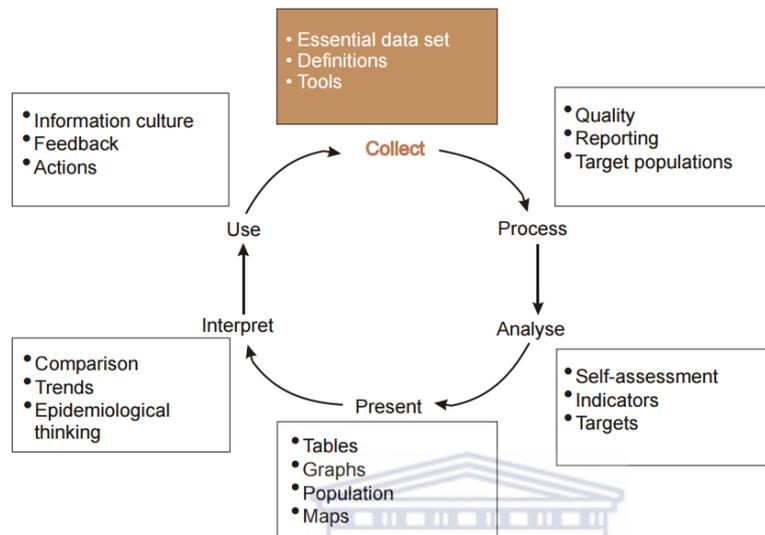
*Decision makers and organisations gather information and do not use it; ask for more, and ignore it; make decisions first, and look for the relevant information afterwards... Were one to ask why organisations treat information in these ways, it would be possible to reply that they are poorly designed, badly managed, or ill-informed ... But the pervasiveness of the phenomenon suggests that perhaps it is not the decision makers who are inadequate, but our conceptions of information.*

### 2.5.3 Information's link with knowledge

The health information system literature places emphasis on the concept of information and information use, without overtly including knowledge in some of its key theoretical bases and conceptual frameworks. The expressed goal of health information systems is to make information actionable and to support decision-makers in acting (Sauerborn, 2000; Health Metrics Network, 2008b; Boerma et al., 2010; MEASURE Evaluation, n.d.). This approach to information fits the definitions of knowledge as information that is made actionable (Maglitta, 1996 in Alavi & Leidner, 2001) or applied (Duncombe & Heeks, 2001) respectively. Health information systems are thus concerned with knowledge too as understood in the broader information system literature.

While the technical literature on HIS has, since its early days, underscored the need to convert data to information, the link to knowledge is a more recent addition. Earlier documents, such as the influential *Design and implementation of health information systems* (Lippeveld et al., 2000) and its forerunners (World Health Organization Regional Office for the Western Pacific, 1993; World Health Organization, 1994), stressed the need to convert data to useful information and, very specifically, the need to then use this information in decision-making. However they did not consider *knowledge* as a separate and relevant concept to be included in conceptual frameworks. Lippeveld et al. (2000) had an early insight into the importance of knowledge and wrote about the Van Lohuizen (1986) knowledge-driven model of decision-making, but did not include it in their depiction of the Information Use Cycle (see Figure 2.4). An information cycle (also known as a data use cycle) was introduced in *Using information for action: a manual for health workers at facility level* (Heywood & Rohde, n.d.) which remains influential in how information use is understood (John Snow, Inc., 2012). In this cycle, data is collected and aggregated and then transformed into information through processes of validation, analysis (calculation of indicators) and representation in graphs or tables; in the last stage it is interpreted and used for decision-making. Despite not mentioning knowledge, these documents and those that follow (Health Metrics Network, 2008b; Boerma et al., 2010; MEASURE Evaluation, n.d.) demonstrate understanding of the expressed goal of health information systems being the provision of information to support decision-makers in acting:

... information is not an end to itself, but a means to better decisions in policy design, health planning, management, monitoring, and evaluation of programmes and services including patient care, thus improving overall health service performance and outcome. (Sauerborn, 2000, p33)



**Figure 2.4. The omission of knowledge in the Information Cycle**

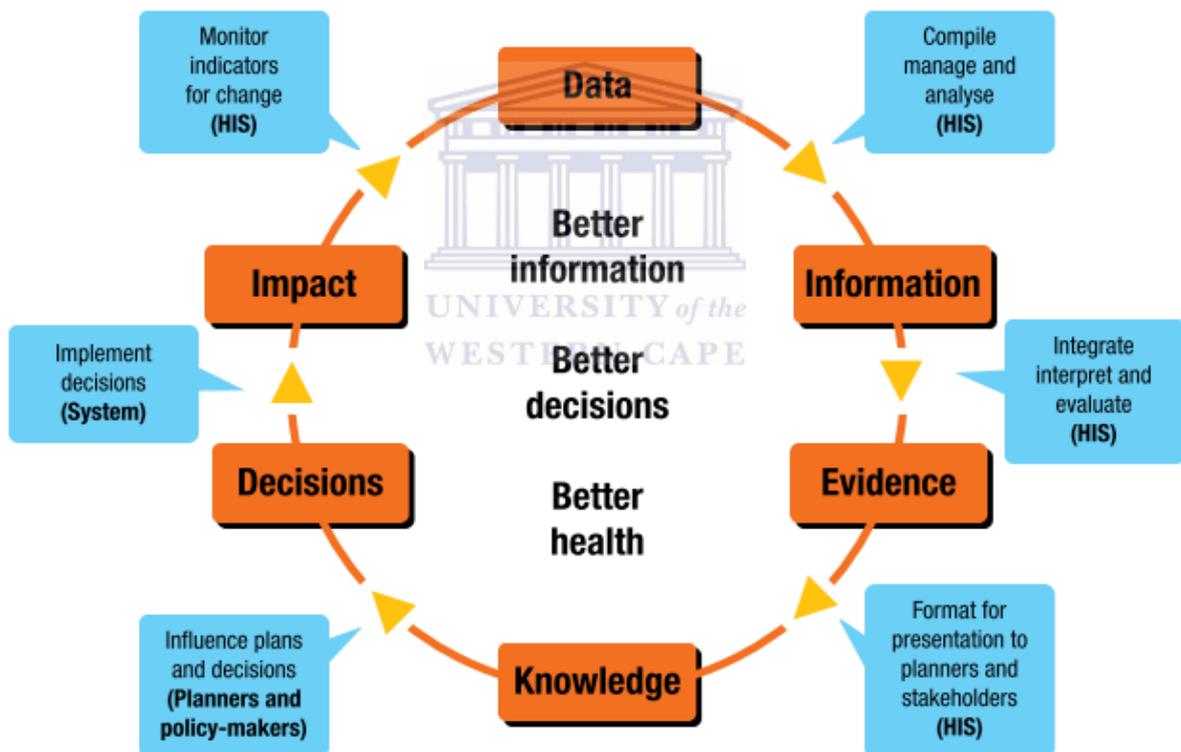
Source: Arthur Heywood & Rohde (n.d., p21)

Post 2005, HIS researchers and practitioners have extended the data-information chain to include knowledge as shown in the quotation below from the chapter, Information to Improve Decision Making for Health in the book *Disease Control Priorities in Developing Countries* (Jamison et al., 2006):

*However, data or information alone will not transform outcomes. Data, which are simple measures of characteristics of people and things, have little inherent meaning or value. Analysis of the data enables the identification of patterns, thereby creating information. Finally, the use of information to generate recommendations, rules for action, and behavior change signifies the creation of knowledge that is used to make decisions and change human behavior. (Stansfield et al., 2006, p1018)*

The concept of knowledge is formally included in the transforming data framework set out by Health Metrics Network (2008b) in *Framework and standards for country health information systems*. This framework, shown in Figure 2.5, extends the data use cycle by introducing the concepts of *evidence* and *knowledge*. In this framework, evidence (which constitutes

information when it is integrated with other information, interpreted and evaluated) must be formatted for presentation (in this sense it is applied to what planners and stakeholder need to know) in order to be turned into knowledge. It is then ready to be used to influence plans and decisions. The model is interesting in how it includes *evidence* as a step in the transformation of information to knowledge. This is perhaps in response to the parallel concern in clinical medicine for evidence-based decision-making (Bagshaw & Bellomo, 2008; Greenhalgh, 2002; Lambert, 2006). As clinicians begin to place value on evidence-based clinical decisions, so health managers and planners have adopted a similar language to co-opt support for evidence-based decision-making (Bowen & Zwi, 2005; Greenhalgh & Russell, 2009; Kirkwood, 2004; van Kammen, de Savigny, & Sewankambo, 2006; Victora, Habicht, & Bryce, 2004).



**Figure 2.5. The inclusion of knowledge in the Transforming Data into Information and Evidence Cycle**

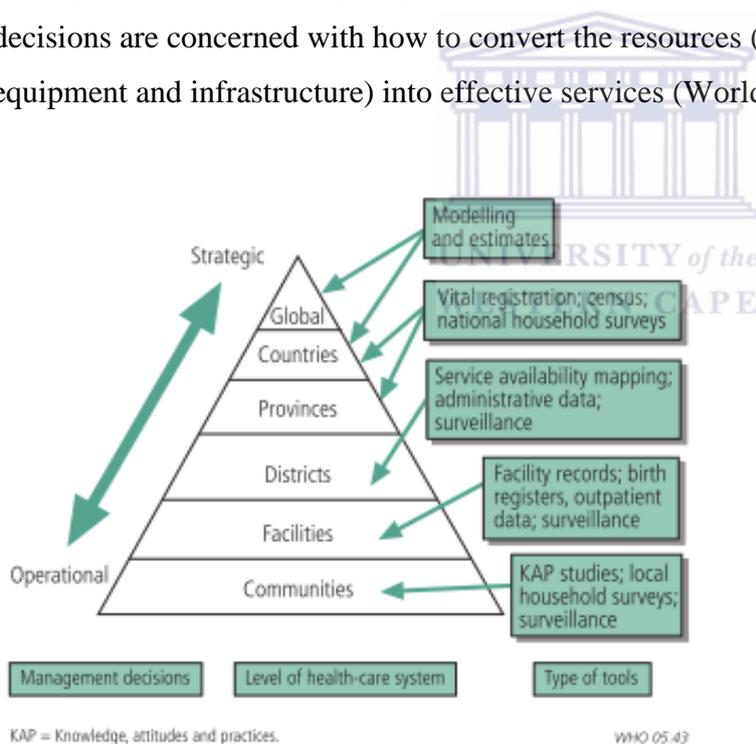
Source: Health Metrics Network (2008b, p42)

This model is also interesting in how it specifies roles for different actors in the decision-making cycle: the HIS is understood to be responsible for collecting, managing and analysing

data, as well as integrating, interpreting and formatting it as it becomes knowledge. Planners and policy makers then use the knowledge produced by the HIS to make decisions, which are implemented by the health system. The HIS then has a role in assessing the impact of these decisions.

### 2.5.4 Information needs at different levels of the health system

Different management decisions are understood to be required at different levels of the health system, as shown in Figure 2.6: decisions taken at community and facility level are seen as being *operational* in nature, while those taken at national and district level are more *strategic* (World Health Organization, 2009; Abouzahr & Boerma, 2005). In decentralised systems, districts are also seen to have a role in strategic planning (Braa, Heywood, & Sahay, 2012). Strategic decisions set the policy direction and resource allocation, while operational decisions are concerned with how to convert the resources (such as finance, staff, supplies, equipment and infrastructure) into effective services (World Health Organization, 2009).



**Figure 2.6. Health information required at different health system levels**

Source: Abouzahr & Boerma (2005, p580)

The health information required for management is understood to vary at the different health system levels (Abouzahr & Boerma, 2005; Bodart & Shrestha, 2000), both in relation to what is being managed and in relation to the type of decision-making (strategic or operational). At

the level of health facilities, it typically focuses on information on service delivery coverage and quality. At a district level, the focus shifts to resource management (drugs and supplies, human resources and finance) and includes surveillance. At higher levels, population-based data such as demographics and health status are used, and there is increasingly recognition of the importance of information on the social determinants of health too. At a global level, the data is often comprised of estimates and modelling to correct for inaccuracies or incompleteness of country-level data.

Gorry and Scott Morton (1971), writing about management information systems, explore how the information needs differ in strategic and operational decisions. Strategic decisions often require information that is sourced outside of the organisation, is wide in scope, is aggregated and is used some time after collection. In contrast, operational decisions require information that is generated within the organisation, is often well defined in scope, is detailed and needs to be current to be relevant.

In addition to the type of information required, the relationship between information and decision-making is understood to vary at different levels in health system, with information having a stronger impact on operational decisions, and less of an impact on strategic, policy-related decisions:

*As we move up the health-system pyramid, the link between data and decision-making seems more tenuous, and many factors come into play when strategic decisions on resource allocation are made. In a large and complex society, policy-making is fragmented and decisions are sometimes difficult to make because of the competing interests of different players and agencies. (Health Metrics Network, 2008b, p45)*

### **2.5.5 What information is use in health management: empirical evidence**

There is empirical evidence of a wide range of different types of health information that managers use in decision-making. There are many examples of studies demonstrating the use of information from the HIS to improve health service delivery and programme performance. For example, the Tanzania Essential Health Interventions Program supported district managers in collecting and using burden-of disease and cost-effectiveness data which achieved a 47 percent reduction in child mortality rates (Stansfield et al., 2006). In Bolivia

training of middle level managers and support in interpreting information from the RHIS and developing action plans led to a 300 percent increase in hospital utilisation (Pappaioanou, 2003). In Cote d'Ivoire, national HIV programme managers were supported in collecting and interpreting HIV counselling and testing (HCT) statistics, which led to a 77 percent increase in programme performance over a three year period (Angeles et., 2012). These studies all focus on the use of quantifiable information, collected to inform management decisions.

Further there is a smaller set of studies which have found that health managers use information from the HIS, but that they also use information accessed or generated from routines of management practice for decision-making (Mutemwa, 2006; Macdonald et al., 2008; Williamson & Kaasbøll, 2009; Damtew et al., 2009; Moahi, 2000). In a study of strategic decision-making in Zambia, Mutemwa (2001, p391) found that management processes generated information, outside of the formal HIS, which district managers used in decision-making,:

*The channels of information also come in a variety of forms, most of them disguised in the form of management activities, strategies, or processes.*

Mutemwa (2001) lists these processes as meetings, supervisory visits, task forces and consultation, and communication with local communities and categories, and the information generated as verbal, written observational and experiential.

In their study of primary healthcare managers in South Africa, Williamson and Kaasbøll (2009) found that the information that a facility manager obtains from a facility *walk-about* to observe staff and work allocation can be vital to human resource decisions regarding staffing shifts and work allocation. They call this *soft information*. They observed that facility managers also obtained soft information by liaising with staff, peers, management cadres and community groups. They report instances where facility managers placed higher value on soft data than on information from the formal HIS, and made decisions preferentially on the basis of the soft data where they doubted the accuracy of, or saw as irrelevant, the formal HIS data. They suggest that this soft information is relevant to lower level management cadres.

Similarly, in a comparative study of health workers in rural Ethiopia and primary healthcare managers in South Africa, Damtew et al. (2009) identify routines of management practice as an important source of local information about the communities and households served.

*They communicate with subordinates, colleagues, superiors and community volunteers, they write and read reports and correspondence, they go out to see for themselves, and they interact with the patients and dwellers directly. (Damtew et al., 2009, unnumbered)*

They found that this local knowledge was, in some cases, augmented by the experience of the manager having grown up in the same community, or having not only worked but lived in the community for a long time. This local knowledge was used in the absence of population-based information in the HIS.

Moahi (2000) looked at tasks carried out by 28 healthcare planners and managers in Botswana, their information needs and the sources that they used. She found that health managers accessed and used information they encountered informally within their management practice: government documents, circulating mail and correspondence, office discussions, meetings, other departments, and telephone conversations in their work.

The value of information accessed or generated from routines of management practice for decision-making has also been found in a developed countries setting. Using critical incident techniques, Macdonald, Bath, and Booth (2008) examined the information seeking behaviour of 19 senior and middle level managers in Canada, when faced with a novel situation. They found that managers all used “internal information” which they define as implicit or explicit information, created within the organisation. The former included information gained experientially and through intuition, such as an awareness of decision complexity or confidence in one’s own judgement; the latter included reports, meeting minutes, policies, or practice guidelines. Only rarely did manager seek information from sources external to the organisation. Mintzberg (1973) working with managers both within and outside of the health sector and at various levels of seniority found they valued informal, oral and current information over hard data:

*The managers I studied seemed to cherish soft information. Gossip, hearsay and speculation form a good part of the manager’s information diet ... Formal*

*information is firm, definitive - at the limit, it comprises hard numbers and clear reports. But informal information can be much richer, even if less reliable. On the telephone, there is tone of voice and chance to interact. (Mintzberg, 2006, p27)*

Mintzberg describes as *folklore* the idea that “*senior manager need aggregated information, which a formal management-information system best provides*”. He identifies five media of information which they use routinely within their practice: “*documents, telephone calls, scheduled and unscheduled meetings, and observational tours*” (1975, p52).

Experience emerges as a significant factor in informing decision-making in Mutemwa’s study (2001). He found that, in the majority of the strategic decisions studied, district management team members shared their experience in the context of management meetings, across all three stages of decision-making (problem recognition, investigation and solution).

Williamson and Kaasbøll (2009) found that experience informed how facility managers used information: this included their assessment of what information was relevant, as well as where and how to obtain it. The use of experience has been coupled with intuition in some studies. A participatory action-research project in Canada (Mitton & Patten, 2004) found that, if concrete evidence was not available, healthcare decision makers used a combination of professional experience, knowledge of patient preferences and intuition. These were termed “soft” evidence and seen to be powerful forces in decision-making.

The use of experience has also been described in relation to tacit knowledge. Daake et al. (2004, p241) worked with highly experienced professionals in a United States hospital setting, who engaged in a strategic decision-making process to plan a response to healthcare reforms. The participants had access to detailed facts and formal data but instead were found to prefer the use of “opinion, stories, illustrations, analogies and metaphors, and some vague references to regulations and laws based on personal experience”.

## 2.6 Summary

This literature review has focused on health system literature, describing the need for management strengthening, and locating this within decentralised health systems. The nature of health information systems and their desired role in supporting management has also been reviewed. The historical development of HIS and the constraints to HIS effectiveness have been introduced and finally, this review has drawn on empirical research to consider the varied nature of information that is used in health management. In the next chapter, these findings are used to inform definitions of *formal information* and *informal information*. In addition, the chapter reviews a broader body of literature which includes psychology and management sciences, to develop the conceptual framework which guided this research.



# Chapter 3. Conceptual Framework

## 3.1 Introduction

As this research is transdisciplinary, the review of theory and constructs which informed it covers a number of different disciplines and fields, including management sciences (knowledge management and management information systems being part of this), Health Policy and System Research, and psychology. This chapter supplements the literature review which, in contrast, focuses on the health management and health system literature.

In Chapter 3, the role that the conceptual framework played, and how it evolved during the research process, is described. The evolution of the framework is illustrated in Figure 3.1 below, which illustrates four iterations – I-IV: the version presented in the research proposal is II of Figure 3.1. An overview of the major constructs (each representing a field of study), their relationships and the propositions generated by these relationships, is then explored. This is followed by a detailed discussion of the three major constructs with reference to how each is defined in the literature, as well as key terms and important constructs within it. Furthermore, each section considers a range of frameworks (for the health system context), models (for decision-making) or taxonomies (of knowledge) which were considered for inclusion in the conceptual framework. Where relevant, how the particular constructs have been applied in health management, or what health management research has shown about these constructs, is also covered in each section. The sections on each major construct are concluded by describing which particular constructs were used in the conceptual framework, what changes were made to these constructs and the rationale for these changes.

## 3.2 Role and evolution of the conceptual framework

Much operational research is descriptive rather than explanatory and does not engage strongly with theory; in contrast, Health Policy and System Research sets out to be more explanatory, acknowledging the complex nature of health systems. To achieve this, the use of a conceptual framework is recommended in Health Policy and System Research, enabling

one to engage with concepts and theories which offer one “a general explanation of what is going on in a situation” (Gilson, 2012, p54). Within a conceptual framework, relationships between different concepts are useful for generating propositions.

According to Miles and Huberman (1994, p440) a conceptual framework selects concepts of relevance to the research question, and organises the concepts in a set of meaningful relationships: “[A conceptual framework] *lays out the key factors, constructs, or variables, and presumes relationships among them*”.

In case study research, Yin (1994) supports the development of a conceptual framework during the design stage. This differs from ethnographic work or grounded theory, where the conceptual framework may emerge during the analysis. In this research, the first version of the conceptual framework informed the research proposal presented to and approved by the University of the Western Cape’s Higher Degrees Committee, as the basis for this research.

Theory on research methods suggests that in the design stage, concepts are drawn from empirical and theoretical literature (Gilson, 2012) as well as from the researcher’s own interpretation of the literature, prior observations and experiences (Leshem & Trafford, 2007). In this research the initial conceptual framework and its set of propositions emerged from a review of the literature across a number of different disciplines (management sciences, cognitive and behavioural psychology) which suggested that the process of decision-making can take different forms, and that different types of information are used. Furthermore, the health information system literature suggests that health information is often not used as intended by system planners (Aqil et al., 2009; Beesley, Cometto, & Pavignani, 2011; Braa et al., 2001; Chaulagai et al., 2005; Coleman & Garten, 2009; Edwards & Lippeveld, 2004; Health Metrics Network, 2008b; Heywood & Campbell, 1997). Discussions with peers in the DIALHS project, and confirmed in the literature (Mintzberg, 2009; Simon & Newell, 1970), suggested that decision-making is key to management, and that strengthened district and facility management is crucial to improving service delivery and health outcomes. In addition, these discussions pointed to the importance of taking a systems approach to understanding decision-making, in particular examining the health system in which managers are embedded, which provides the context for their management experience. Finally the conceptual framework also drew on the researcher’s own experience as principal investigator

and participant-observer in a previous research project, which worked with managers in developing and using a set of tools and processes for evaluating integrated HIV, TB and STI services at facility and sub-district level (Loveday et al., 2011; Scott et al., 2012; Scott, Zweigenthal, & Jennings, 2011). This experience revealed that audit information, despite meeting most recommended criteria of acceptability (being timely, appropriate, highly relevant, reliable and of high quality), was not used as actively as intended, and that facility managers were responding to multiple directives and management agendas within the sub-district context.

The development of a conceptual framework at the design stage in this research introduced theoretical rigor, and informed the data collection methods and the focus of what data was collected:

*Developing a conceptual framework forces you to be explicit about what you think you are doing. It also helps you to be selective; to decide which are the important features; which relationships are likely to be of importance or meaning; and hence, what data you are going to collect and analyse* (Robson 1993, 150–151 quoted in Leshem & Trafford, 2007, p97).

The framework served well as a starting point for the research process. The initial understanding of the three major constructs representing the three fields of study (health system context; decision-making; information and information use) were organised in a way that showed a set of relationships and suggested a set of propositions (described below) that could be investigated, and which, through investigation, could lead to exploring the research question.

In keeping with the constructivist<sup>11</sup> perspective underlying this research, and the flexible research strategy that this allows (Gilson, 2012), the conceptual framework was allowed to evolve during the research process, as is illustrated in Figure 3.1: a preliminary framework (I) developed while reading the literature in preparation for developing a research proposal; this evolved to one guiding and being changed by analysis (II). For ease of expression, the phrase *design stage* is used to denote the period of developing the research proposal: however in this

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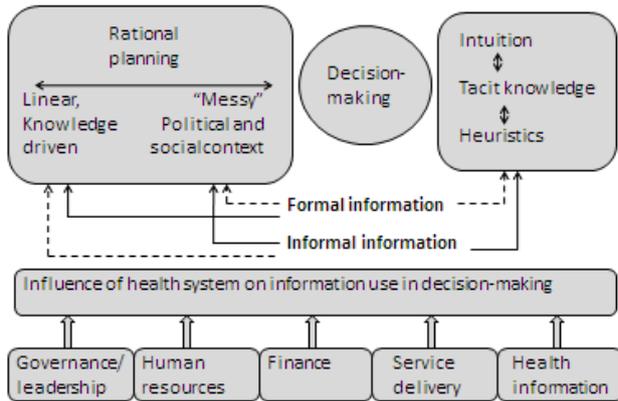
<sup>11</sup> This perspective, discussed in Chapter 3 – Methods, holds that reality is constructed by individuals and in interaction with others and, as such, is socially constructed and multiple.

research, this term is an oversimplification, as the design of this research continued to emerge during data collection and analysis, as described in Chapter 4 - Methods. Miles and Huberman (1994, p13) support the notion that conceptual frameworks can change during the research process when they refer to them as the “the current version of the researcher’s map of the territory being investigated” (emphasis added). In this research, the major theoretical constructs and their relationships to one another remained stable during the evolution of the conceptual framework, but there were some changes in the particular phenomena or constructs being used, and how they were framed within the major constructs. For example, in the first stages of data collection, field experience showed that it would be difficult to identify examples of intuitive decision-making using observations and other qualitative research methods. Also, rational decision-making exercises, such as operational planning to meet targets, seemed to involve elements of decision-making that were not fully rational or articulated. So, while *decision-making* remained a major theoretical construct, the focus on particular modes of decision-making and types of decision was removed.

Lastly, the conceptual framework both informed the analysis and was transformed by it, representing the final stage of its evolution. This is in keeping with the “constant process of conceptualising and reconceptualising” required in rigorous HPSR (Gilson et al., 2011, p6):

*[U]sing ideas and theory to develop an initial understanding of the problem or situation of focus to guide data collection, but using the data collected to challenge those ideas and assumptions and when necessary, to revise your ideas in response to the evidence ...*

Figure 9.4 in *Chapter 9 - Cross Case Analysis* represents the transformation of the conceptual framework into theory.

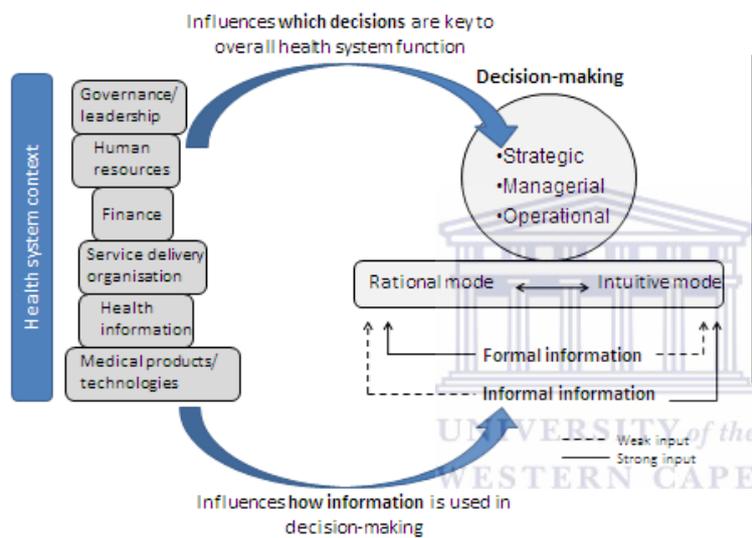


--- Weak input  
 — Strong input

**I. Conceptual framework -**

**Preliminary version** developed while planning the research.

This version understands decision-making to occur in two different modes.



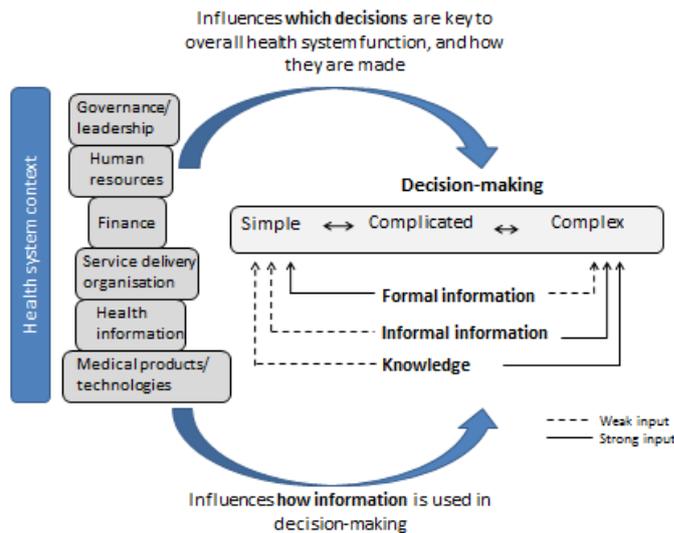
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**II. Conceptual framework -**

**Proposal version** presented in the research proposal, which informed early data collection.

This version considers different types of decisions.

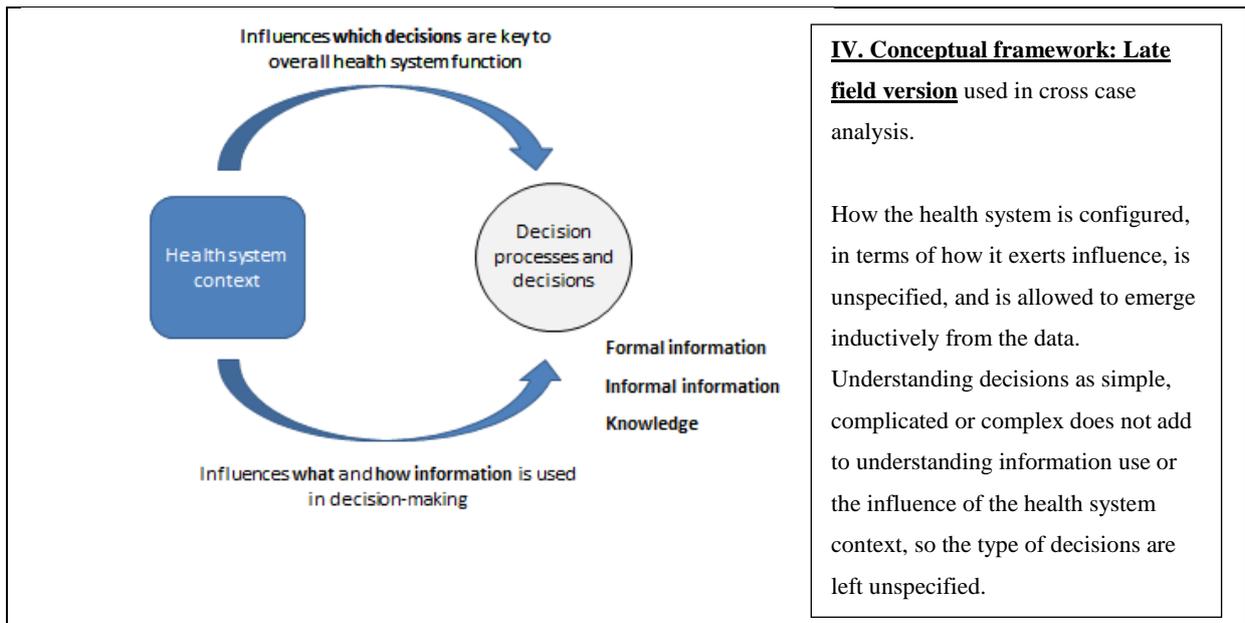


--- Weak input  
 — Strong input

**III. Conceptual framework: Early**

**field version** as it was being changed by and informing iterations of data collection and analysis.

Modes of decision-making have been removed as they were difficult to observe in the field. Understanding decisions as simple, complicated or complex seems useful. Knowledge has been added.



**Figure 3.1. Evolution of the conceptual framework from planning this research to analysis**

### 3.3 Overview of the conceptual framework: major theoretical constructs used

In seeking to support management practice as a key intervention to improve the delivery of health services and thereby health outcomes, this research was primarily interested in *what* information is used and *how* it is used.

Underpinning this research is the view that managers need information to manage and improve the delivery of the health services for which they are responsible, that good decision-making requires good information, and that the health system has a role to play in supporting managers by generating and making accessible information that is appropriate and timely. What information facility managers use, and how they use it in decision-making, is therefore of prime importance.

From the start, this research was concerned with notions of formal and informal information. Formal information was understood to be information that was formalised by health management practices and procedures. Informal information was an open category which included all that informed decision-making but which was not formalised. As data collection began, knowledge emerged as another important resource that managers used in decision-

making. Although this was not anticipated at the outset of this research, knowledge emerged as critical to informing decisions, and at times merged with notions of applied information (as described later in this chapter); it was therefore included in the conceptual framework and informed further data collection, since this research is concerned with *that which informs decisions*.

The second major theoretical construct in the conceptual framework is decision-making. Decision-making is key to the work of managers; Simon (1960) uses decision-making and managing synonymously. Decision-making, and specifically *how decisions are made*, is a well-established focus in management research (Mintzberg, 2009), but is not often addressed in the health management literature, except in relation to policy analysis (see for example Walt, 1994). In health service management it is generally assumed that decision-making is a rational process. Decision-making requires information (Gorry & Scott Morton, 1989; Mintzberg, 2009; Simon & Newell, 1970; Simon, 1955) and because it offers the possibility of understanding information use, it is therefore a subject of interest for this research. Mintzberg, Raisinghani and Theoret (1976, p246) differentiate between the decision and the decision process. They define a decision as “a specific commitment to action (usually a commitment of resources)” while the decision process is defined as the preceding process, spanning an unspecified length of time, which is constituted of “a set of actions and dynamic factors that begins with the identification of a stimulus for action and ends with the specific commitment to action”.

The third major theoretical construct in the conceptual framework is the health system context. Health policy literature and its precedents in public policy literature suggest that context is an important factor influencing the implementation of policy and programmes. For example, in Walt and Gilson’s Policy Triangle Framework (Walt, 1994) which has been extensively used to understand implementation (Gilson & Raphaely, 2008), context features as one of four domains, in relationship with actors, processes and policy content. Drawing on this understanding of the importance of context, this research posited that facility managers’ use of information should be understood within the context in which they work. In the research undertaken here, the context of interest was that in which facility managers work and make decisions. This included their facility, community, the sub-district management embedded within, and the broader organisational, health system and, ultimately, national

context, including its historical and political dimensions. For the purposes of this research, the context was framed as the health system context. Importantly in terms of the design of this research, the context is that of the decision-making processes (designated as three cases) and not that of the individual facility managers, all of whom brought personal dimensions to bear on what information they used, and how they used it in decision-making.

The three major theoretical constructs - information, decision-making and health system context - were understood to be in relation to one another as shown in Figure 3.1. First, the health system context was understood to determine which key decisions were potential levers for health system strengthening (and this was used as a rationale for the selection of decision-making cases to be investigated). Second, the health system context was seen to influence what information facility managers used in their decision-making process, and how they used it. Third, the nature of the decision was thought to influence which type of information was more likely or more heavily used. It is these relationships which gave rise to the propositions which the research then set out to explore.



### **3.4 Literature review of major constructs: health system context**

#### **3.4.1 Scope of this section**

In this section, various health system frameworks are reviewed to understand how health systems are conceptualised in the literature. These frameworks also have bearing on how the health system is organised at local level, especially in terms of their component parts; it gives insight into how managerial, technical and administrative systems are arranged to support service delivery. For example, health information systems, an important support for managers at all levels of the health system, is understood in some frameworks to be a component part. Significantly, such frameworks have become important in thinking about developing, coordinating and funding health system strengthening initiatives, and so are important constructs with which this research engaged when thinking about recommendations emanating from it. This section also considers how the health system is conceptualised in systems thinking as a complex adaptive system, and what implications this might have for understanding the context in which facility managers work. This section concludes with how

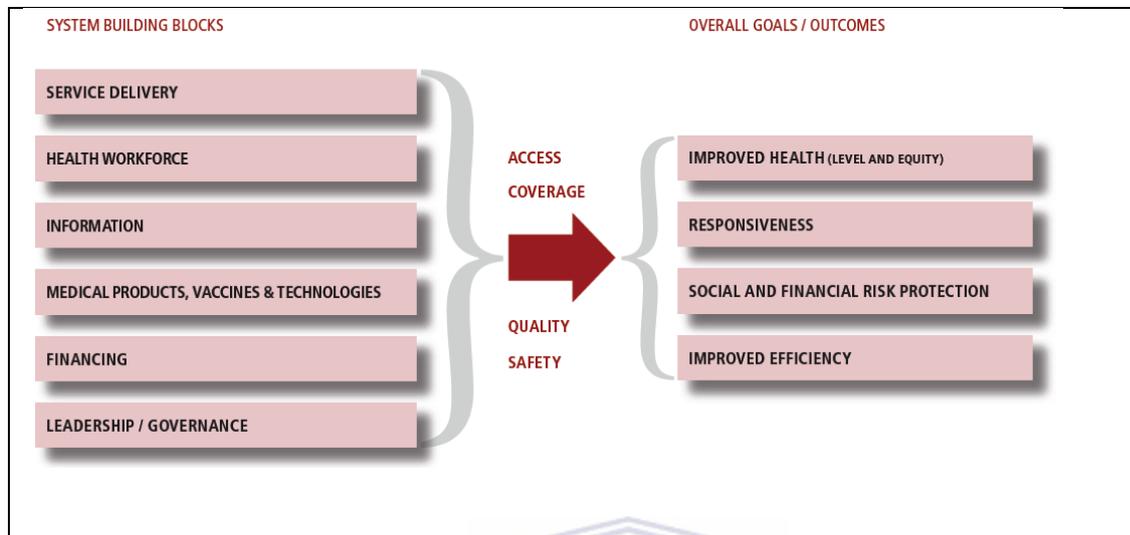
the framing of the health system context evolved from the design stage through to the analysis.

### 3.4.2 Introducing health system frameworks

This research adopted and used the WHO definition of a health system as “all the activities and actors whose primary purpose is to promote, restore or maintain health” (World Health Organization, 2000b). A number of health system frameworks have been developed to define, describe and explain health systems and also to predict or prescribe their behaviour (Shakarishvili et al., 2010; van Olmen et al., 2012; Gilson, 2012). Conceptually they are organized differently (Shakarishvili et al., 2010). Some are based on understandings of relationships between actors such as that developed by Frenk (1994), others have been defined either in terms of their goals, as for example that of the WHO (World Health Organization, 2000b; World Health Organization, 2007; (Roberts et al., 2003), or their component parts, such as structures and processes and functions (Roemer, 1989). In the last decade, the dominant focus has been on the last group, with a number of new influential frameworks seeking to name and conceptualise the key component parts (World Health Organization, 2007a) and the relationships between these parts (de Savigny & Adam, 2009; Van der Veken et al., 2014; van Olmen et al., 2012). In this research, this last group of frameworks was explored further because they are currently dominant and allowed the research to be grounded in and to respond to current health system debates.

Roemer (1989) offers one of the earlier examples of understanding health systems in terms of component parts. He describes a health system as “the complex of activities intended to result in the provision of health services” (1993, p63). He describes an array of activities which, together with management, are required for the provision of services, and includes the production of resources (health workers, health facilities, commodities such as drugs, knowledge), organization of programmes and financing. The WHO Framework for Action (World Health Organization, 2007a), building on its earlier Performance Framework (World Health Organization, 2000b), presents similar ideas. It proposes a set of six *building blocks*, which are understood to be key functions or components of a health system, as depicted in Figure 3.2. Importantly, these components are no longer organised in relation to service delivery, as in their 2000 Performance Framework or other earlier models of health system

components such as that of Roemer (1989). Further, the health information system is now defined as a separate building block, whereas it was previously seen as either part of management or of the oversight/governance role.



**Figure 3.2. WHO Framework for Action**

Source: WHO. *Everybody Business: Strengthening Health Systems to improve Health Outcomes: WHO's Framework for Action* (79, p3)

The six building blocks are described (verbatim, but reformulated here) in the report as:

1. service delivery that is efficient, effective, safe and of good quality;
2. leadership and governance which ensures a strategic policy framework exists and gives effective oversight, coalition building, appropriate regulations and incentives, attention to system-design, and accountability;
3. a health workforce which is efficient, competent, responsive, fair and productive;
4. health information that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health systems performance and health status;
5. medical products, vaccines and technologies that are of assured quality, safety, efficacy, cost-effectiveness, scientifically sound and equitably distributed;
6. health financing that is adequate, fair and protective against impoverishment.

In their paradigm for health system strengthening, shown in Figure 3.3, de Savigny and Adam (2009) build on the WHO Framework for Action but introduce elements of systems thinking. They use the same six building blocks, which they consider to be *sub-systems* of the

health system, and propose a dynamic architecture with interconnectedness amongst the health system building blocks:

*Health systems are often seen as monolithic, as a macro system with little attention paid to the interaction among its component parts, when in fact they are a dynamo of interactions, synergies and shifting sub-systems. (de Savigny & Adam, 2009, p32)*

This framework acknowledges the central role played by “people and their institutions” (de Savigny & Adam, 2009, p32) in a number of roles in the health system: as financial mediators, providers, citizens, members of civil society, communities and patients. It argues that a systems approach requires an understanding of the context of relationships, and that it is possible to identify leverage points for system change. Two potential leverage points are identified: the first is governance, given the centrality of relationships, and the second is health information which is necessary for the exercise of governance.



**Figure 3.3: de Savigny and Adam’s dynamic architecture and interconnectedness of the health system**

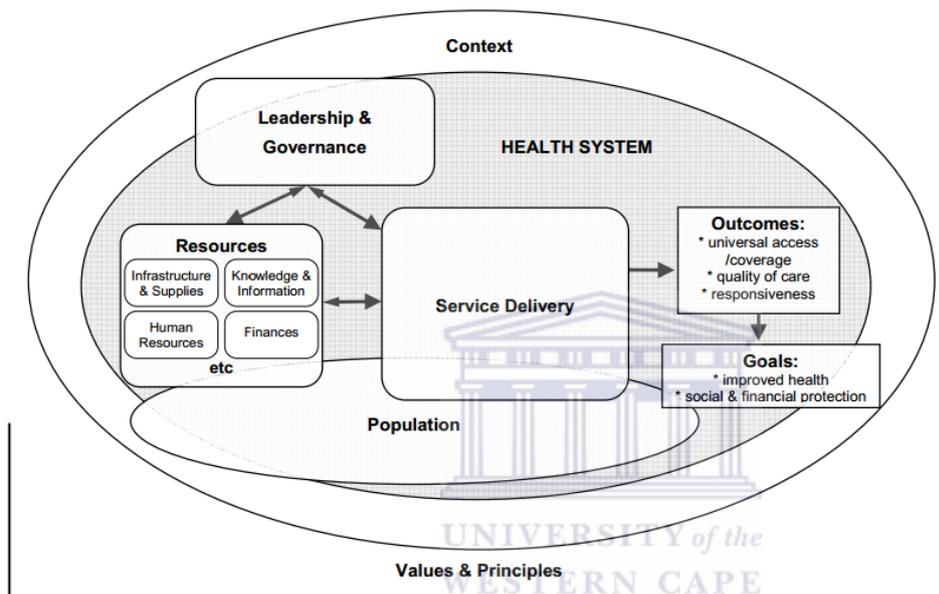
Source: de Savigny and Adam, (2009, p32)

Van Olmen et al. (2010, p22) similarly draw on systems thinking and notions of complexity in their Health Systems Dynamics Framework:

*There are a lot of possible interactions in all directions between the elements, such as feedback loops, generative processes and emergence. Processes in such a system are often non-linear, results from forces operating between dynamic equilibriums. Besides, HSs are open systems and influenced by context and history.*

The Health Systems Dynamics Framework, shown in Figure 3.4, reorganises the building blocks to demonstrate the relationship between them. Leadership and governance becomes a

main component in supporting service delivery, and the other building blocks are packaged together as a set of resources used, through the exercise of leadership and governance in supporting service delivery. Health information is no longer seen as a separate building block; reference is made to information and it is coupled with knowledge as one of the resources which is needed to support service delivery. Van Olmen et al. (2010) emphasise the importance of the values and principles underlying the health system. Furthermore, van Olmen et al. recognise the importance of context in health system strengthening, and put forward a central role for the population - patients, communities and citizens.

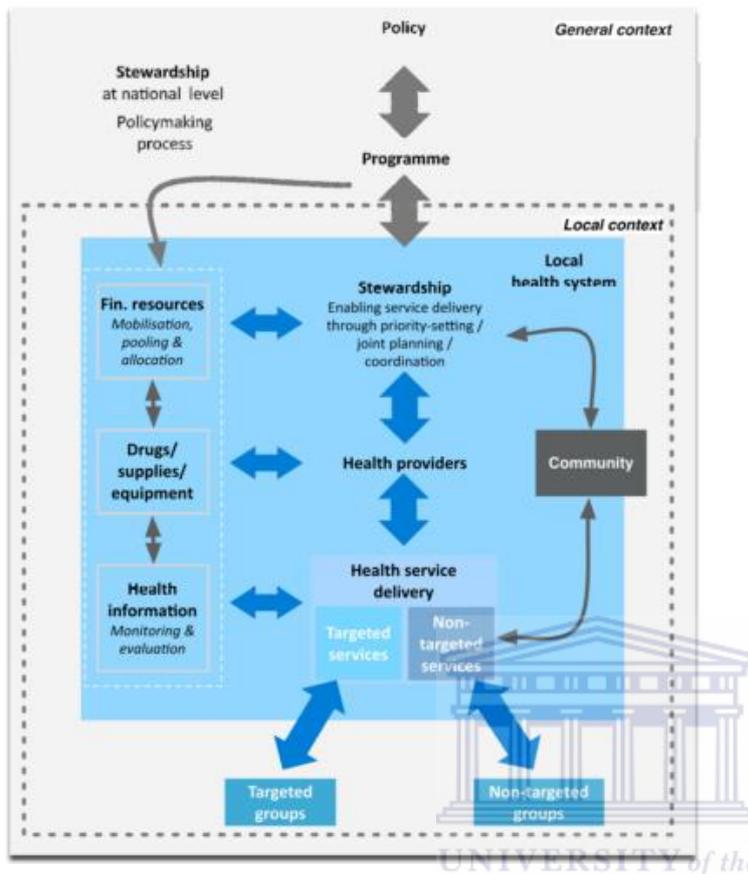


**Figure 3.4. van Olmen et al's Health Systems Dynamics Framework**

Source: van Olmen et al. (2010, p21)

The Health Systems Dynamics Framework has been adapted for use in describing the local health system, and for understanding the effects of policy change (Van der Veken et al., 2014). This framework, the Policy Effect Mapping (POEM) framework, is shown in Figure 3.5: it places the district within a national context responsible for stewardship, policy development and prioritization in terms of programme development. A central axis within the local health system is that of managers (responsible for stewardship), and health providers responsible for direct health service delivery. At the local level, the POEM transforms the human resource building block into *health providers*, giving emphasis to health workers as people who need to be managed and supported in delivering services. Similar to van Olmen et al's Health Systems Dynamics Framework, there is a central axis served by three subordinate functions. This has important implications when defining the local purpose of

financial resources, drugs, supplies and equipment, and health information: they are to support management, health workers and service delivery.



**Figure 3.5. Policy Effect Mapping framework: a conceptual framework of a local health system**

Source: Van der Veken et al. (2014, 10)

### 3.4.3 The health system as a complex adaptive system

Increasingly system thinking is being used to understand and research health systems and health problems. Three of the frameworks described in the preceding section – de Savigny and Adam’s framework for health systems strengthening (2009), van Olmen et al’s 2010 Health Systems Dynamics Framework and Van der Veken et al.’s 2014 Policy Effect Mapping Framework – all embrace systems thinking. While de Savigny and Adam acknowledge that the health system is complex, and promote systems thinking as a way of transcending this complexity, the other two frameworks go further in explicitly incorporating and using notions of complexity and seeing the health system as a complex adaptive system (CAS).

Hardon et al. (2001) describe the dynamic nature of health systems as follows: “*a health system is not a static phenomena. It is a continuous process of changes due to pressure from both outside the system and from within the system*” (Hardon et al. 2001, p27). Key to systems thinking is the understanding that a health system is made up of interconnected elements which influence one another. This introduces complexity (de Savigny & Adam, 2009). Plsek and Wilson (2001, p746) point out that the interactions between elements in a complex adaptive system are often “more important than the discrete actions of the individual parts”. Importantly, the interactions in a CAS have certain attributes (Marchal et al., 2014; Plsek & Greenhalgh, 2001). They are non-linear, meaning that there are leverage points where a small intervention can have a large impact on other aspects of the system. Also the interactions may involve positive and negative feedback loops, and there may be time delays between the intervention, and the impact on another part of the system. This explains two key attributes of a CAS: emergent behaviour and unpredictability. CASs are also path-dependent, which means that they may be sensitive to and perpetuate decisions taken in the past; hence they may resist change. Finally, Marchal et al. (2014, p9) suggest that, because health systems have people at their core (as managers, staff, patients, communities and populations), they are inherently complex and have the ability to *self-organise*:

*Human agency is indeed the key factor that leads to adaptive change and evolution within complex systems. It also leads to variation in behaviour being the rule in complex adaptive systems rather than exceptional.*

An understanding the health system as a CAS is increasingly being found useful when applied in empirical research (Begun, Zimmerman, & Dooley, 2003; Gilson et al., 2014; Paina & Peters, 2012; Peters, 2014; Sarriot et al., 2014; Schneider & Somers, 2006; van Olmen et al., 2010; Varghese et al, 2014; Marchal, Belle, & Brouwere, 2014).

#### **3.4.4 The importance of governance**

The World Health Organization definition of governance is a process that “involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, the provision of appropriate regulations and incentives, attention to system-design, and accountability” (World Health Organization, 2007, p3). The body of existing health

governance research is limited (Scott et al., 2014) and is mostly focused at national or global levels, adopting a macro-perspective that focuses on governance structures and forms (Kaplan et al., 2013; Ruger, 2007), principles of state-society relationships (Brinkerhoff & Bossert, 2008; Saltman & Ferroussier-Davis, 2000) or broad indicators for assessment (Siddiqi et al., 2009). The related work on health system decentralisation, meanwhile includes consideration of sub-national levels (Bossert & Beauvais, 2002; Mills, 1994; Mitchell & Bossert, 2010), and community accountability mechanisms and processes (McCoy, Hall, & Ridge, 2012; Molyneux et al., 2012), but also tends to focus on governance form, structure or principles. Much less attention has been given to what Hill and Hupe (2002) call a micro-perspective in this governance literature, i.e., to considering how governance is practiced at the level of implementation in the health system; (for an example of such work and its value, see Scott et al., 2014).

The public policy literature has been used in Health Policy and System Research to understand how policy is implemented (Erasmus et al., 2014; Gilson, Schneider, & Orgill, 2014; Scott et al., 2014) and provides important theoretical frames for thinking about governance. Writing in this literature, Hill and Hupe (2007) suggest that there are potentially different modes of governance at play in any given setting. They draw on work by Lindblom (1977, in Hill and Hupe, 2007), who has described three mechanisms of social control: authority, exchange and persuasion<sup>12</sup>. From this, Hill and Hupe (2007) describe three modes of governance. The authoritarian mode is the more traditional understanding of government, with notions of top-down control. This is typical of bureaucracies. The central action in the authoritarian mode of governance is to exercise control of the system through rules. In the transactional mode (developed from the idea of market exchange), performance frameworks are created and targets are set. This is typical of the new public management approaches (Mitchell & Bossert, 2010). In governance by persuasion, participation of other role-players is encouraged, with the central action being to enable participation and give direction.

Another useful construct from the public administration literature, linked to governance, is that of accountability. This construct is relevant to this research as health information is often understood to be useful for increasing accountability of the peripheral health system

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<sup>12</sup> These ideas have a close parallel in organisational theory which differentiates between three forms of organisational control: bureaucracy, the market and the clan (Ouchi, 1978).

(facilities and programmes delivering health services) to the centre. Hill and Hupe adopt a definition of accountability put forward by Bovens (1998, in Hill and Hupe, 2007), understanding accountability as “a social relationship in which an actor feels an obligation to explain and to justify his conduct to some significant other” (Hupe & Hill, 2007, p286). This concurs with the definition put forward by Brinkerhoff (2004) in health system literature, which sees the essence of accountability to be answerability, having an obligation to “give account” of decisions or actions. Recent writing in health system literature shows different forms of accountability at work in the primary healthcare setting, which include both vertical and horizontal forms (Cleary, Molyneux, & Gilson, 2013). Hill and Hupe (2007) suggest that there are not only multiple modes of governance, but also multiple accountabilities at play at the level of implementation. They have developed a typology which sets out three “modes of implementation” - enforcement, performance and co-production - which each has a corresponding form of accountability and which mirror the modes of governance. While the modes of governance work across the levels of the health system, the modes of implementation are relevant to the local level of decision-making. In the mode of enforcement, there is a top-down vertical form of accountability enacted by the requirement of compliance to rules and standard operating procedures. In the mode of performance, there is another vertical form of accountability, but this is built on compliance to targets and contracts. In the mode of co-production, there is a more horizontal form of accountability with compliance to internalised professional standards and working towards shared goals and standards. While implementation by enforcement and performance works through rule-bound and contractual relationships respectively, implementation by co-production works through relationships of trust.

### **3.4.5 Conceptualisation of the health system context and its evolution in this research**

In this research, a system lens was used because it offered notions of interconnectedness and complexity. This fitted with the proposition that facility managers, as agents in the health system, both influenced and were influenced by the actions of other agents at the same and at different levels of the health system. While the researcher was in agreement with the view that the health system is a CAS, and examples of some of the specific attributes of a CAS were observed in some of the interactions between facility managers and other actors in the

sub-district, this thinking did not frame the research process and the analysis did not seek to explore information use in terms of the attributes of a CAS.

In this research the health system was initially conceptualised as the building blocks described in the WHO Framework for Action (World Health Organization, 2007a). In the first three panels of the evolving conceptual framework, Figure 3.1, the functions are depicted as a stack of building blocks. While the researcher was aware that the concept of building blocks was being critiqued as potentially *creating silos* for separate functions, it was used in the design (panel I and II) and early field version (panel III) for a number of reasons: first, it gave very clear definitions of what the different functions were, and the researcher found it a useful aide to *see*, or bring into focus<sup>13</sup>, the different functions of the health system; second, it was developed to offer a better understanding of health systems (Hoffman, Røttingen, Bennett et al., 2012) and is therefore aligned with the explanatory nature of the research question; third, it was the opinion of the researcher that the local health system is, de facto, organised in separate organisational departments or subsystems that correspond well with the different WHO building blocks; and fourth, the framework remains highly influential and is widely taught and debated. The particular significance of governance only emerged in the final processes of analysis and write up. At this late stage it became clear that the notion of building blocks, without some hierarchical form of relationship between the building blocks, was no longer a good fit. This accounts for the use of an unspecified health system context in panel IV of Figure 3.1 which allowed the researcher the opportunity to construct an understanding from the data (rather than from existing theory) of which health system components mattered in answering the research question, and how they were arranged in relation to one another. The inductive understanding was incorporated into the final model, developed during the cross case analysis and described in Chapter 9, for how the health system context influenced the use of information.

While not depicted in the panels of Figure 3.1, the health system was understood to operate at different levels, which includes the macro (global and national), meso (organisational and local) and micro (individual interactions) levels (Gilson, 2012; Van Damme, Kober, & Laga,

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<sup>13</sup> For a description of learning to *see* a construct in the data (i.e., being able to recognise and label it) and then work with it in relation to other constructs, please see the section on doing direct observations in Chapter 4 - Methods.

2006). The influence of the health system on the work of facility managers was understood to arise from all these levels. Therefore in understanding the context influencing facility managers, it was important to understand the global and national health agendas and priorities, as well as the local sub-district priorities.

## **3.5 Literature review of major constructs: decision-making**

### **3.5.1 Scope of this section**

This section starts by briefly mapping some of the terms and key constructs associated with decision-making across a variety of disciplines – management sciences, cognitive and social psychology, and political science. It then describes some prescriptive and descriptive models of decision-making, as well as models (and here there is some overlap) which deal with notions of rationality and intuition. A review of work on intuition is included, not only as a contrast to rational planning, but because the use of intuition has been associated with expertise (Lord & Hall, 2005) and marks the difference between experts and novices in any field. Further, it gives important insights into tacit knowledge, another construct which was considered in the early stages of planning this research, and which returned to importance during data collection when it became evident that knowledge as well as information was being used in decision-making (this is described in section 3.3). The purpose of reviewing different models of decision-making is to demonstrate the wide range of models, as well as the evolution of thinking within particular disciplines, and the cross-pollination of ideas between disciplines. The wide range contrasts with the overview of the fairly narrow, rational understanding of decision-making represented in much of the health management literature which follows. Finally the constructs used in the conceptual framework at the design stage are described, starting with a preliminary conceptual framework which preceded the one presented in the research proposal at the end of the design stage, as well as the reasons for changing the constructs used during the early and later stages of analysis.

### 3.5.2 Introducing key terms and constructs

Simon (1960) argues that decision-making is more than the decision itself; it is a process. Weiss (1982) makes a similar point saying that decisions are mistakenly characterised as a bounded event with a particular set of actors, when in actual fact they are part of a more diffuse process.

Mintzberg et al. (1976, p246) conceptualise a decision as:

*a specific commitment to action (usually a commitment of resources) and a decision process as a set of actions and dynamic factors that begins with the identification of a stimulus for action and ends with the specific commitment to action.*

A lot of the theoretical and empirical work on decision-making lies in the management, political science and psychological literature (Mintzberg et al., 1976). Psychological literature has looked at both individual and collective decision-making (in the fields of cognitive and social psychology respectively) and tends to study these phenomena within laboratory settings, while management literature looks at decision-making within organizational contexts and has studied the practice of managers. Important understandings of planning processes have been contributed by the political science and public administration literature, which have studied decision-making in the context of the policy process (Grindle & Thomas, 1991; Van Lohuizen, 1986).

Models of decision-making have been variously described as a set of stages, and according to the sequencing of these stages, as structured or unstructured (Gorry & Scott Morton, 1971; Mintzberg et al., 1976), and as rational or intuitive. Decision-making is also sometimes described in relation to the nature of the *problem* which is being dealt with - that is, how structured or unstructured, or how simple or complex the problem is. There is considerable overlap in these constructs as they are applied in describing decision processes.

Some models present prescriptive or normative views of what decision-making *should* be while other models are more descriptive of how decision-making happens in the real world (Simon, 1979). The prescriptive models include the rationale choice theory (Simon, 1955) and what Mutemwa (2001) considers its derivative normative planning models, for example

Green (1992). The descriptive models include those related to iterative (Weiss, 1982) or incremental processes (Lindblom, 1959), unstructured decision-making (Mintzberg et al., 1976), the *garbage can* model (Cohen et al., 1972), notions of problem solving (Gorry & Scott Morton, 1971; Newell, Shaw, & Simon, 1958) and concepts of bounded rationality (Simon, 1979) and the use of intuition (Sadler-Smith & Sparrow, 2007).

Another helpful construct which has been developed and used in Health Policy and System Research is that of *decision space*. Bossert (1998) proposes the concept of decision space in writing about decision-making authority in the context of health system decentralisation. It is grounded in principal agent theory (Bossert & Beauvais, 2002, p15):

*In this perspective, the Ministry of Health, as 'principal', sets the goals and parameters for health policy and programmes. This principal then grants authority and resources to local 'agents' ... for the implementation of its objectives.*

The concept of decision space is linked to the concept of autonomy which is defined as independence in decision-making and the ability to act on those decisions. Importantly, the concept acknowledges that the subordinates (or agents of implementation) in a decentralised system have a certain amount of discretion in how they meet the objectives: this is referred to as a *margin* in which they have choice (Bossert & Beauvais, 2002). Further it acknowledges that subordinates may have different priorities and agendas from the principal. While there is a formal decision space defined by legislation, governance structures and accountability processes, there is a larger informal decision space because rules are not always applied and actions cannot always be fully supervised. The concept of decision space has been used to understand what decisions managers make in decentralised health systems (Bossert & Beauvais, 2002; Bossert, 1998, 2003).

### **3.5.3 Prescriptive models of decision-making**

Early models of planning were based on notions of a logical, linear progression through a set of specified stages, and are implicitly rational in nature. Lasswell promoted a policy focus in knowledge production about public problems, and was one of the first proponents of the then emerging interdisciplinary field of policy analysis (Torgerson, 1985). He was the first to introduce the concept of *stages in decision-making* which became a dominant paradigm in

policy analysis (Sabatier, 1991), although it is also contested (Jann & Wegrich, 2007). Lasswell described seven stages in a decision-making process: intelligence, promotion, prescription, invocation, application, termination, and appraisal. These stages are defined by Lasswell et al. as follows (Snyder, Hermann, & Lasswell, 1976, p229):

*For working purposes, the intelligence function can be understood to include the gathering, processing, and dissemination of information to participants in the decision process; promotion is the mobilization of support for action; prescription is the formulation of general goals and instrumental norms; invocation is the provisional characterization of concrete situations in terms of the norms; application is the final characterization; termination is the ending of prescriptions and the adjustment of claims that arose during the period in which the prescriptions were in effect; and appraisal is concerned with characterizing the degree to which policy objectives have been achieved, and with assigning responsibility to those who effectively conditioned the results and are formally responsible for them.*

The terminology for and order of the stages (in particular where *termination* fits) has been changed somewhat over time. Current conventions in policy analysis (Jann & Wegrich, 2007) include: agenda-setting, policy formulation, decision-making, implementation, and evaluation (eventually leading to termination). Within the field of policy analysis, later theorists have critiqued Lasswell. The model is seen to be prescriptive, presenting a view of what *should* be, rather than what *takes place* in practice, and assumes that the policy process is rational (Jann & Wegrich, 2007). Some suggest that his approach to analysis is technocratic and presents a positivist approach, but Torgerson (1985) has argued that Lasswell stressed an awareness of context in the policy process.

What Lasswell contributed to policy analysis, Simon (1947) in his book *Administrative behavior: a study of decision-making processes in administrative organization*, contributed to organisational decision-making by putting forward a set of three main stages: *intelligence*, which involves scanning the environment for conditions requiring a decision; *design*, which is about developing possible courses of action; *choice*, which is about selecting the action; and lastly *review* which considers the outcomes of the decision made. Simon (1977) emphasises the importance of the choice stage, which involves selection of an option from a number of alternatives, directed toward an organizational goal. The task of choosing consists

of three steps: identifying the alternatives; determining the consequences of each alternative; and comparing the consequences. Simon's three stages are similar to those put forward by John Dewey in 1933 in relation to problem solving: "What is the problem? What are the alternatives? What alternative is best" (cited in Gorry & Scott Morton, 1971, pp 52-53). Mintzberg uses Simon's three stages in his study of unstructured decision processes (Mintzberg et al., 1976) and Nutt (1984) built on these stages in describing types of organizational decision processes. Simon acknowledges that the cycle of phases cannot be viewed simplistically:

*The cycle of phases is, however, more far more complex than the sequences suggests. Each phase in making a particular decision is itself a complex decision-making process. The design phase, for example, may call for new intelligence activities; problems at any given level generate sub-problems that in turn have their intelligence, design and choice phases, and so on. There are wheels within wheels ... Nevertheless, the three large phases are often clearly discernible as the organisational decision process unfolds. (Gorry & Scott Morton, 1971, p52)*

#### **3.5.4 Descriptive models of decision-making**

Both Lasswell and Simon's models of decision-making are made up of sequential stages. Witte, Joost and Thimm (1972) tested this understanding (which they called the *phase theorem* but which others have called the *stages heuristic*) in the context of complex decision-making. They found that the types of activities suggested by the stages heuristic existed, but that they were not clustered in distinct stages; rather the stages overlapped considerably:

*... the theorem's claim of information-gathering, alternative-developing, and alternative-evaluating operations can be found in decision-making processes in large numbers; however, they do not culminate in distinct phases in time, but rather are distributed over the total duration of the process. (Witte et al., 1972, p177)*

*We believe that human beings cannot gather information without in some way simultaneously developing alternatives. They cannot avoid evaluating these alternatives immediately, and in doing this they are forced to a decision. This is a*

*package of operations and the succession of these packages over time constitutes the total decision-making process.* (Witte, Joost, & Thimm, 1972, p180)

They conclude that a more realistic model should allow the various parts of the decision process to overlap and to come in a different order in different decisions.

Writing in the early 1980s, Weiss describes the “imagery” of decision-making that is commonly assumed in popular and academic literature (Weiss, 1982) in terms of five descriptive terms, which follow in italics. Decision-making is thought of as having *boundedness*, in involving a discreet set of actors with authority, within one location, deciding over a relatively short time period. There is a sense of *purposiveness* with the assumption of clear goals and objectives. It is thought to involve a *calculation* based on costs and benefits and it is assumed that there is a set of options. There is *a perceived significance* to a decision, a sense that it is an important step and has consequences; and finally, there is an assumption of *sequential order* to stages in the process. Giving examples from the education sector, Weiss holds that most policy decisions differ from this in reality, in at least one if not more of the descriptors. Weiss’ work suggests that rather than being a sequential process through stages, decision-making is a highly iterative process. Grindle and Thomas (1991), in the field of policy analysis, support this. They describe how the policy process is influenced or even reversed at any stage by a multitude of stakeholders with conflicting interests. Their model presents decisions as unstructured.

Mintzberg et al. (1976) have proposed an influential, non-sequential model of decision-making in a paper entitled The Structure of ‘Unstructured’ Decision Processes. They have identified three phases (stages) of decision-making – identification, development and selection - which roughly correspond to the stages which Simon sets out in his model in 1965 (intelligence, design and choice), but these phases are not in a simple sequential relationship:

*[The decision-maker] may cycle within identification to recognize the issue during design, he may cycle through a maze of nested design and search activities to develop a solution during evaluation, he may cycle between development and investigation to understand the problem he is solving ... he may cycle between selection and development to reconcile goals with alternatives, ends with means ... Typically, if no solution is found to be acceptable, he will cycle back to the development phase.*

(Mintzberg et al., 1976, p264)

Further, within the three phases, they identify seven routines which are understood as sets of activity that happen within the phases. For example, there are two routines within the identification phase: recognition of the need for a decision and diagnosis of this need in terms of cause-and-effect relationships. The development phase consists of two further routines: the search for and the development of a solution. The selection phase consists of screening, evaluation-choice and authorisation routine.

Lindblom (1959) has proposed *muddling through* as an alternative to rational, linear decision-making, particularly in complex situations. In his work on public administrators, he describes this as the dominant approach to decision-making: the decision-maker chooses the policy to meet the desired objectives and the desired objectives at the same time; in reality, decision options are limited and that they are made incrementally, or in terms of what is marginally beneficial over other options. Lindquist (2001, p19) writing in the policy science literature sees incremental decision-making as one mode of decision-making, and contrasts it with routine and fundamental decision-making. He describes incremental decision-making as opportunistic, dealing with selective issues in a piecemeal fashion as they emerge. In contrast, he understands routine decision-making to “focus on matching and adapting existing programs and repertoires to emerging conditions” while fundamental decisions allow for rethinking policy logic and programme design.

Cohen et al. (1972) have put forward the *garbage can* model of decision-making. They challenge the formulation of rationality that sees organisational decision-making as a response to a clearly defined problem and as guided by a clear set of objectives. They suggest that an organisation “discovers preferences through action, more than it acts on the basis of preferences” (Cohen et al., 1972b, p1). They therefore suggest that a different management strategy is required:

*Significant parts of contemporary theories of management introduce mechanisms for control and coordination which assume the existence of well-defined goals and a well-defined technology, as well as substantial participant involvement in the affairs of the organization. Where goals and technology are hazy and participation is fluid, many of the axioms and standard procedures of management collapse. (Cohen et al., 1972b, p2)*

Cohen et al. also challenge the idea that decision-makers are a predetermined group and are constantly available to participate in the decision process. In the garbage can model, a decision is the outcome of several relatively-independent *streams* within an organisation: a stream of problems that acquire attention, a stream of solutions that exist or are possible, and a stream of energy from participants. There is also a fourth stream in this model, which is seen as a stream of choices being made about timing and *decision structure*, the latter understood to be about who is eligible to participate in the decision process. Decision-making is thus not a clearly delineated pathway through a set of stages, but a confluence of problems, solutions and decision-makers available at a given time. The garbage can model is seen as one of the unstructured approaches to the policy process (Hill & Hupe, 2006). It informed the development of Kingdon's (1984) *Model of Agenda-setting* which describes three streams (problem, alternative solutions, and politics) which converge in decision-making and the setting of policy agendas.

Gorry and Scott Morton (1971) originally proposed a model of rational decision-making but later, in a retrospective commentary on their original article (Gorry & Scott Morton, 1989, p59) acknowledged it was insufficient to support management:

*... the 'rational actor' model of decision-making does not properly reflect the vagaries of the management setting. To improve on practice there, we need to accommodate the complexities of multiple goals, different organisational cultures, and varying personal styles described by Schein, Mason and Mitroff, Mintzberg, Weick, and others.*

They suggest that the term *problem solving* is more suitable than *decision-making*, as it is a more realistic description of the process which occurs over an extended period, lacks clarity, and involves complex iterative processes. In this they build on the earlier work by Simon and Newell on problem solving, which suggests that the problem structure and environment determines the appropriate problem solving methods (Simon & Newell, 1970). Gorry and Scott Morton, writing in the field of management studies, note the crucial learning that takes place in the process of problem solving and acknowledge the amount and diversity of knowledge in addressing unstructured problems. Weiss (1982), writing about education policy, specifically chooses to avoid the use the term *problem solving* because she says that

most public problems are not solved; she suggests using the term *coping with problems* as a more realistic description of what decision-makers do.

### 3.5.5 Models of decision-making concerned with rationality and intuition

Theoretical understanding of rationality in decision-making comes mainly from psychology, where it is studied in both individual cognitive psychology and in organizational psychology (Dean & Sharfman, 1993). Rationality in organisational decision-making is defined as:

*the extent to which the decision process involves the collection of information relevant to the decision, and the reliance upon analysis of this information in making the choice.* (Dean & Sharfman, 1993, p589)

Rational approaches to decision-making are also termed “analytical” (Sadler-Smith & Sparrow, 2007) and typically involve approaches such as a logical progression through stages of decision-making. In their study of 57 strategic decisions in 24 companies, Dean and Sharfman (1993) found that strategic decision-making procedures were most rational when competitive threat and external control were limited, and the nature of problems were certain (i.e., agreement on goals, cause-and-effect, constraints).

Simon (1947) recognises that there are limits on rationality, imposed by the individual’s ability to process information and by the environment. He worked with colleagues, Cyert and March of the Carnegie School, in publishing a set of papers which explored the concept of *bounded rationality* (Dean & Sharfman, 1993), meaning that rational behaviour has conditions and limits. While decision-makers intend to be rational (which was defined primarily as being goal orientated), this intention is thwarted by limitations of the human mind (the inability to give full attention to each decision and to consider all goals and objectives at the same time), and the structure of the environment (time and knowledge resources are limited). This results in decision-makers *making do* or *satisficing*<sup>14</sup>: instead of considering all information and all options, they make do with the information they have, and are content to make a *good enough* rather than an optimal decision. Dean and Sharfman

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<sup>14</sup> Satisficing is a technical term used by Simons to denote the action of being satisfied with enough information and options, recognising that a decision-maker cannot know or anticipate everything.

(1993) suggest that this model explains why some decisions are more rational than others. In the model of *bounded rationality*, outcomes are not seen as irrational, but are seen as reasoned within limits (Sadler-Smith & Shefy, 2004).

Complementing the theory of bounded rationality is a body of work which identifies other drivers in decision-making such as heuristics, emotion and intuition (Langley et al., 1995; Eisenhardt & Zbaracki, 1992). Heuristics are simple rules of thumbs for problem solving that follow a logic that is quite different from consequential logic (Albar & Jetter, 2009). They recognise patterns of information from past experience and provide shortcuts to suitable solutions without the decision-maker having to go through the full reasoning process again. Heuristics have been found to be useful aides that have the potential to improve reasoning and decision-making (Gigerenzer & Todd, 1999) especially in situations where there is a limit to time, knowledge, attention-span and resources. They are therefore associated with the concept of bounded rationality. Emotions can also function as heuristic principles for guiding and stopping information search (Gigerenzer & Todd, 1999). Likewise social norms can function as heuristic principles to support decisions-making, when time and knowledge is limited (Gigerenzer & Todd, 1999).

Clear definitions of what is meant by intuition are important (Hammond et al., 1987) as there are many understandings and lay interpretations of the use of the word. Sadler-Smith and Sparrow (2007) have identified four approaches to defining intuition in the literature on organisational decision-making. It is variously defined as an ability, an information processing technique, a cognitive-affect *gut-feeling* or an inductive way of knowing. This is shown in Table 3.1.

For example, the following definition of intuition given by Sinclair and Ashkanasy (2005) is classified as cognitive-affective in Sadler-Smith and Sparrow's review (2007, p2): "*a non-sequential information processing mode, which comprises both cognitive and affective elements and results in direct knowing without any use of conscious reasoning*". In contrast, Greenhalgh's understanding falls into the second category, seeing intuition as a processing ability. She identifies the following list of features (Greenhalgh, 2002, p396): "*a rapid, unconscious process; context-sensitive; comes with practice; involves selective attention to small details; cannot be reduced to cause-and-effect logic (i.e., B happened because of A);*

addresses, integrates, and makes sense of, multiple complex pieces of data”. Like Dreyfus and Dreyfus (1986), she identifies intuition as a hallmark of an experienced practitioner’s decision-making processes and quotes their work:

*Experienced intuitive [practitioners] do not attempt to understand familiar problems and opportunities using calculative rationality ... When things are proceeding normally, experts don’t solve problems and don’t make decisions: they do what normally works.* (Greenhalgh, 2002, p396)

**Table 3.1. Different perspectives on intuition**

PERSPECTIVE	DESCRIPTION	SOURCE
<i>Intuition-as-ability perspective</i>	Willingness to make decisions when all the facts were not currently available, and the ability to have such decisions validated with probability higher than chance	Simon, 1947
	Ability to appraise a situation holistically and pull patterns together	Showers and Chakrin, 1981
	A questioning outlook on certain types of data and situations; the ability to judge when normative analyses break down	Blattberg and Hoch, 1990
	Innate problem solving ability; visualising the causes of a situation	Swink, 1995
	Ability to recognise patterns and interpret cues	Klein, 2003
<i>Information processing perspective</i>	Ability to judge stimulus properties on the basis of information that is activated in memory but not consciously retrieved	Bolte and Goschke, 2005
	Unconscious process. Preliminary perception of coherence (pattern, meaning, structure) guiding thought and inquiry toward a hunch or hypothesis (a novel recombination of knowledge and information precipitated out of memory) about the nature of that coherence	Bowers et al., 1990
	Synthesising unconnected memory fragments into a new information structure	Mintzberg et al, 1998
<i>Cognitive-affective perspective</i>	A means of complex data processing	Payne et al., 1993
	Immediate judgements based on feeling and the adoption of a global perspective	Allinson and Hayes, 1996
	Using 'soft', personal information and 'gut-feel'	Molloy and Schwenk, 1995
	Awareness of thoughts, feelings, or bodily sense connected to a deeper perception, understanding, and way of making sense of the world (i.e. a system of processing that is synthetic and integrative ).	Sadler-Smith and Shefy, 2004
	Non-sequential, holistic and comprises both cognitive and affective elements, and results in direct knowing without any use of formal reasoning	Sinclair and Ashkanasy, 2005
<i>Alternative epistemology perspective</i>	Affectively-charged judgments that arise through rapid, non-conscious, and holistic associations	Dane and Pratt, forthcoming
	Knowledge derived from inward illumination - a beam of light cast upon a chaotic confusion	Amabile, 1983
	An alternative, competing, and inductive way of knowing.	Davis-Floyd and Arvidson, 1997

Source: Sadler-Smith & Sparrow (2007, p2)

In the case of empirical, laboratory-based research, Reber’s work (1989), implicit learning was studied and understood to be an unconscious process, based on experience, that generates

abstract knowledge. He describes intuition as “the end-point of an implicit learning experience” , and elaborates as follows:

*It is a cognitive state that emerges under specifiable conditions, and it operates to assist an individual to make choices and to engage in particular classes of action. To have an intuitive sense of what is right and proper, to have a vague feeling of the goal of an extended process of thought, to ‘get the point’ without really being able to verbalize what it is that one has gotten, is to have gone through an implicit learning experience and have built up the requisite representative knowledge base to allow for such judgment. (Reber, 1989, p233)*

He thus links intuition to *tacit knowledge*. Hodgkinson, Langan-Fox and Sadler-Smith (2008) reviewed 14 different definitions of intuition in the literature, and identified a further two studies (Polanyi, 1964; Bowers et al., 1990 in Hodgkinson et al., 2008), which understand intuition as an aspect of tacit knowledge, as it draws on experience and expertise. Tacit knowledge is defined as practical knowledge learned informally through experience (Wagner & Sternberg, 1985). Intuition is seen as a vehicle by which tacit knowledge is accessed unconsciously (Sadler-Smith & Sparrow, 2007).

The use of intuition in organisational decision-making is influenced by a range of factors (Sadler-Smith & Sparrow, 2007; Sinclair, 2010): cognitive styles, affect, organisational culture, the nature or characteristics of the decision or problem and the decision-making context. For example, Parikh, Neubauer and Lank (1994) suggest that managers are more likely to use intuition when solving ill-defined problems, which they have not encountered before.

Hammond et al. (1987) have described a cognitive continuum theory whereby both rational/analytic and intuitive reasoning occurs along a continuum, and both can be used in a decision process, depending on contingent factors such as the nature of the problem. This has been applied extensively in clinical health management (Cader, Campbell, & Watson, 2005; Hammond, 1987; Offredy, Kendall, & Goodman, 2008). Decision-makers do not use one or the other, but either, as best fits the nature of the problem. In dual processing theory, both intuition and rational analysis are seen to work within the same decision-process (Huang, 2012), and are sequenced with the use of the one following the use of the other (Allen, 2011).

Sinclair (2010) suggests an integrated model of analytical and intuitive decision-making, seeing them as being complementary, and needing to be used iteratively, although acknowledging that one approach might be used more, depending on the context and what is required.

### 3.5.6 Approaches to decision-making applied in health management

Sequential, rational planning approaches to management and decision-making have been influential in health management for decades. The following quotation is from a WHO technical document on *human manpower* planning in the 1970s (Hall & Mejia, 1978, pp15-16):

*Planning is the administrative instrument that provides a rational basis for decision-making. When aspirations exceed resources choices must be made, and if decisions are to be made intelligently and productively they must be based on a careful assessment of options. Perhaps the most important contribution planning can make is the allocation of scarce resources so as to ensure that health services are made available equitably. Planning involves:*

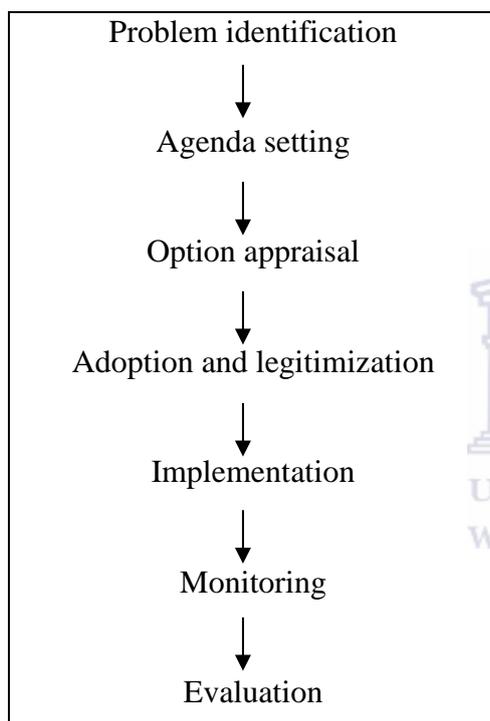
- the identification and analysis of problems,*
- the formulation of alternative options,*
- the selection of the appropriate solution,*
- the determination of the technical methods to be used, whether in the form of services or of physical changes,*
- the definition of programme objectives and of the future action to be taken.*

Writing about health information systems in 2000, Sauerborn (2000) assesses the state of understanding of decision-making in the health sector as follows:

*Little is known about how decisions are made at the various levels of the health system. Most of what we know about how decisions are made comes from the analysis of the policy-making process and most of those analyses are derived from sectors other than health. (Sauerborn, 2000, p34)*

Sauerborn proposes a modified version of Lasswell's model, credited to a WHO technical document, and shown in Figure 3.6. In this model, problem identification is the initial stage

when specific problems are identified that need to be dealt with; agenda setting involves deciding on which of the problems needs to be addressed now; optional appraisal evaluates the various potential solutions that could be chosen; adoption and legitimization is the stage when the decision is made (adopted) and the reason for this is developed so that others will be prepared to accept it; and implementation is the stage when this decision is realised and acted on. In the final two stages, implementation is monitored and the effect is evaluated to see if it has addressed the original problem identified. Van Lohuizen (1986) has developed a similar model which is driven by knowledge.



**Figure 3.6. Modified Lasswell's model**

Source: Sauerborn (2000, p36)

An important variant in this process is that of the spiral planning processes whereby evaluation feeds back to problem identification so that there is an ongoing management process of (Green, 1992); this posits that health information informs the following stages: situational analysis, evaluation, implementation and monitoring, programming, optional appraisal and priority setting.

Rather than a linear, information-driven model of planning and decision-making, the reality on the ground is often more accurately described as *messy* (Sauerborn, 2000). Sauerborn has

cited the work of Grindle and Thomas (1991) as being a more meaningful interpretation of the iterative way in which decisions are made. This resonates with the experience of Beesley et al. (2007), in their work to support the rebuilding human resources in South Sudan. They suggest that decision-making is not just rational but is often messy and, citing Lindblom (1959), requires *muddling through* (Beesley et al., 2011, p7).

*Technical rationality provides only a partial explanation of policy formulation and planning for human resources for health (Murray and Dimick, 1978). Instead of the logical progression towards appealing goals embodied in classical planning approaches, policy formulation, planning and management typically proceed by iterative loops, whose increasing difficulty and complexity are conditioned by feasibility and risk considerations, rather than cold logic, and negotiated with interested parties, whose interests must be explicitly taken into consideration (Robinson 1999). Competing goals, risk- avoidance and non-action, detours, trade-offs, reversals and the divergence between documents and actions are among the hallmarks of real-life health policy and planning processes. Policy makers and planners must master the science of 'muddling through'. (Lindblom 1959, p7)*

While under-researched (Macdonald et al., 2008), there are a few notable examples of work on decision-making in the health sector. For example Baker, Ginsburg and Langley (2004) have looked at why health managers appear resistant to rational models of decision-making, suggesting that different approaches are needed when decisions are made under circumstances of uncertainty and pressure. Mutemwa (2001) investigated eight strategic decisions made by district management teams in two districts in Zambia and found that three stages emerged: problem identification, investigation and solution development. However he found it difficult to determine the start and the end of the decision process and recognised that the divisions between the three stages were blurred. The rational planning model does, however, still dominate management approaches in the health sector as is evident in the following literature: Peabody et al., 2006; Preker, Mckee, & Mitchell, 2006; Seltzer, 2010.

### 3.5.7 Conceptualisation of the decision-making and its evolution in this research

The preliminary conceptual framework used in this research, shown as I of Figure 3.1, regarded decision-making as happening in two different modes. The first was a planning mode which ranged from being linear and rational (driven by knowledge, as depicted by Van Lohuizen, 1989) to being messy (influenced by the political and social context). The latter was a mode which involved the interplay of intuition, tacit knowledge and heuristics. From prior experience, the researcher knew it would be possible to observe planning processes such as in sub-district strategic planning workshops or in the development of facility action plans to improve quality of care after clinical governance audits. However the researcher was concerned that it would not be possible to observe reliably the use of tacit knowledge. For example, how possible was it to differentiate sufficiently between true tacit knowledge on the one hand, and unspoken knowledge, actually known, easily articulated and obvious to all insider participants, but not to the researcher who was an outsider to the specific decision setting? Different definitions of tacit knowledge are discussed in section 3.6.5. The researcher adopted a widely articulated view in the literature that knowledge is located on a continuum, in terms of how tacit or explicit it is (Ambrosini & Bowman, 2001; Assudani, 2005; Kogut & Zander, 1992; Tsoukas, 2003). These considerations led to a simplification of the decision-making domain in the version of the conceptual framework shown as II of Figure 3.1.

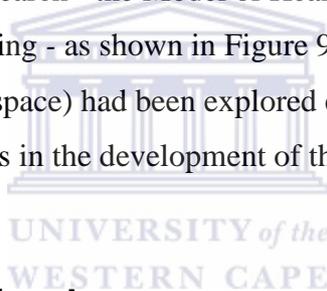
This simplified conceptual framework, submitted as part of the research proposal at the end of the design stage, shows three *types* of decision-making (strategic, managerial and operational), conceptualised as occurring in two *modes* (rational mode and intuitive). The three types of decision-making were drawn from work by Gorry and Scott Morton (1971), who posit that these different types of decision-making have different information requirements in terms of currency, accuracy, frequency of use, scope, level of aggregation and time horizons. In the early stages of data collection, it became apparent that most of the decisions made by facility managers were operational or managerial (defined in Gorry and Scott Morton's work as involving administration and people management respectively), and very little was strategic (setting the direction or vision, or involving large resource allocation). Then a methodological concern emerged related to observing intuition. A review of the literature suggested that researching intuition is difficult, because of its ephemeral

nature (Sinclair, 2010). A lot of research has been done using survey methods and very little is based on qualitative methods, though some researchers have asked decision-makers themselves to judge whether and why they have used intuition. The reliability of these approaches is reduced, as there are multiple understandings of intuition (Sinclair, 2010). The use of survey methods was also not appropriate in this research as the intention of adopting a case study approach was to allow observation of and engagement with facility managers at work in their natural setting, so as to explore how the context influenced their use of information. Further, through early observations, it became apparent that the more rational decision-making exercises, such as operational planning to meet targets, involved elements of decision-making that were not fully rational or articulated. The researcher began to be concerned that a categorisation of rational versus intuitive was too artificial a divide to be useful. Briefly during later stages of the analysis, a categorisation of different types of decision problems according to cause and solution was considered, and is shown in Figure 3.1. This categorisation of simple, complicated and complex problems was developed by Glouberman and Zimmerman (2002) and has been cited by Marchal et al. (2014, p7):

- *Simple problems have simple causes. Causality is linear and simple problems have standard solutions. These can be applied without specific expertise; technical skills are sufficient.*
- *Complicated problems consist of sets of simple problems, but cannot be reduced to them. They are compounded by scale and coordination problems. Solving complicated problems requires expertise and collaboration between experts. Formulae and instructions to solve complicated problems can be developed and are critical to success. If experts apply the formulae correctly, outcomes can be predicted.*
- *Complex problems include sets of simple and complicated problems to which they are not reducible. The interactions between determinants of the sub-problems can lead to non-linear causal relations between potential causes and outcomes. Also context-sensitivity can make a problem complex. As a consequence, outcomes are unpredictable. To solve complex problems, formulae and standardised solutions that proved effective in the past provide little guidance. Instead, complex problems are solved through safe-to-fail experiments that allow learning by doing or by making sense of events post facto.*

Examples of simple, complicated and complex problems emerged in the later stages of the iterative analysis, but this did not have any bearing on what information and knowledge was used, and so it was not pursued further. More significant in relation to the research objectives was the finding that the various management problems - ranging individually from simple to complex - were interrelated and nested within one another, and often involved managing people, and this made the decision-making inherently complex. This is described in the findings and the implications are explored in the discussion. A pragmatic decision was made to explore what and how information was used in decision-making without trying to categorise the type or mode, as shown in panel IV of Figure 3.1.

In the last stages of analysis, when writing Chapter 10 - Discussion, the concept of decision space, which has been described in section 3.5.2 became increasingly relevant to the final theory development and was incorporated at the centre of the framework representing the theoretical contribution of this research - the Model of Health System Influence on Information Use in Decision-making - as shown in Figure 9.4 in Chapter 9 - Cross Case Analysis. This concept (decision space) had been explored earlier in the research, and had been used as a lens during analysis in the development of the rich narratives for each case.



## **3.6 Literature review of major constructs: information and knowledge**

### **3.6.1 Scope of this section**

Information and health information have already been defined in Chapter 2 - Literature Review. This section starts by exploring how information and knowledge are conceptualised in the different decision-making models described above. It then revisits the empirical findings of what information is used by health managers in the field (providing a brief summary of the more detailed findings in the literature review). This provides a grounded approach to understanding what different types of information are used by health managers in decision-making. The section then describes how, drawing on empirical evidence, and in line with the purpose of this research, the terms *formal* and *informal information* have been defined and used in the conceptual framework, and how knowledge came to be included as a

separate category. Definitions of knowledge, some in relation to information, are considered. The key constructs and some taxonomies of knowledge are described, with a detailed explanation of Zack's typology, which was found to be useful in relation to different forms of knowledge used by facility managers in this research.

### **3.6.2 Nature and role of information in different models of decision-making**

The nature and role of information is conceptualised differently across the different models of decision-making. In prescriptive decision-making models, there is an underlying logic of rationality. Information is understood to guide the decision-making process and to provide the basis for its rationality (Weiss, 1982). The conceptualisation of information is that it can be communicated and that it is objective. In Green's spiral model (1992), which understands planning as ongoing, interconnecting cycles of stages, information is understood to support decision-making from the situational analysis, through option appraisal, programming of solutions, implementation and monitoring to the evaluation. The evaluation then provides the information (or more broadly, the evidence) to inform the next cycle, starting with situational analysis.

In descriptive decision-making models, the nature and role of information is understood in a number of different ways. In Weiss's (1982) critique of traditional sequential decision-making models, she challenges the depiction of rationally-orientated information, showing that in the real world of policy-making, there are not always clear goals and objectives, nor are there always sets of options to choose between. The incremental approach to decision-making suggested by Lindblom (1959) also suggests a more constrained role for information, recognising that decision-making is fundamentally limited by a range of other factors which impose a range of limits on what decision is possible. Information is but one of the influences and sometimes not the defining influence. In Lindquist's view (2001) incremental changes to policy are more receptive to policy analyses, while routine changes require more basic *data* that is tailored to pre-designed questions. Fundamental decisions require attention to the logic of existing decisions and should be open to research and debate.

Mintzberg et al's (2007) work on the "structure of unstructured decisions" identifies three stages and seven routines and gives particular attention to the role of information. In this

model, the decision recognition is brought about by *stimuli* which are in the *stream* of information flowing inside or outside the organisation. This information is often verbal:

*Most strategic decisions do not present themselves to the decision maker in convenient ways; problems and opportunities in particular must be identified in the streams of ambiguous, largely verbal data that decision makers receive (Sayles, 1964, 163; Mintzberg, 1973, 67-71). The need for a decision is identified as a difference between information on some actual situation and some expected standard. In a study of these differences, Pounds (1969) found that these standards were based on past trends, projected trends, standards in some comparable organization, the expectations of other people or theoretical models. (Mintzberg et al., 2007, p325)*

Information-seeking is the heart of the next routine which “is the tapping of existing information channels and the opening of new ones to clarify and define the issues” (Mintzberg et al., 2007, p254) and continues to be essential to the development and selection phases.

In addition to the three phases and seven routines, Mintzberg et al. describe three *supporting routines* which are understood to support *across* the phases. One such cross-cutting supporting routine is what they call the “decision communication routine”. They describe this as the:

*active stream of communication throughout the decision process: scanning the environment for stimuli, searching intensively for diagnostic information and for information about alternatives and their consequences, transmitting information up the hierarchy to facilitate authorization, and monitoring the progress of the decision process itself. (Mintzberg et al., 2007, p261).*

In writing about problem solving, Gorry and Scott Morton (1989) introduce notions of knowledge, learning and judgement to the consideration of addressing problems. They write of “the amount and diversity of knowledge that often matters in semi-structured problems” and “the crucial learning that takes place in the complex iterative process of problem solving” (Gorry & Scott Morton, 1989, 59). In an earlier paper they posit that “structured decision making can be automated but unstructured decision making requires judgment and evaluation, as well as insights into problem definition” (Gorry & Scott Morton, 1971, 26) . Objective information remains important but knowledge is viewed as crucial. They posit that

evaluation and judgement can be thought of not only as processes, but also as inputs into the decision-making process.

In the garbage can model of decision-making, Cohen et al. (1972) see streams of decision-makers, choice, problems and solutions coming together with a stream of energy (referring to decision-making attention on the part of the decision-makers). The first three streams all implicitly use information as their currency, but the kind of information is not specified. Elements of the organisational structure are seen to influence the decision outcomes by affecting the timing of and synergies between the problem choices, solutions and the availability of potential decision-makers, as well as the energy potential decision-makers bring to the decision. Key elements of this organisational structure are manifest in the mixture of deliberate planning and individual and collective learning that is enabled. Learning implies knowledge generation and transfer.

In Simon's model of bounded rationality (1947), decision-makers are understood to be constrained in how much information they can access (a constraint of the environment) and in how much information they can process (a constraint of the human mind). The nature of information used is not a defining feature of this model, except for the presence of heuristics as aides to decision-making (Albar & Jetter, 2009).

In a review of the literature on intuition, Sadler-Smith and Sparrow (2007) identify four understandings of what intuition is: two are directly concerned with information and one with knowing. The last sees intuition as an ability processed by the decision-maker. The first understanding related to information is that intuition is a way of *information-processing*. In this category, Sadler-Smith and Sparrow refer to the work of Mintzberg et al. (1998) who see it as an advanced process of synthesis, which connects fragments of memory in new information and to Payne et al. (1993) who see it as a means of processing complex data. The second understanding related to information is that intuition is an informational input: here the same authors refer to the work of Molloy and Schwenk (1995), who write of it as *soft* or personal information, or *gut-feel*, and to Sinclair and Ashkanasy (2005) who identify both cognitive and affective elements as inputs which result in knowing without formal reasoning; furthermore they cite Dane and Pratt (2007) who see it as judgements and non-conscious associations. Sadler-Smith and Sparrow (2007) also point to some understandings of intuition

which incorporate knowledge: Davis-Floyd and Arvidson (1997) understand intuition as *knowing* and Amabile (1983) sees it as knowledge derived from insight.

In summary, the different models of decision-making have very different understandings and emphases in what information and knowledge is required in decision-making. Rational models suggest that objective information is required, while the model of bounded rationality identifies a role for heuristics. Intuitive models make place for gut-feelings, soft information, insight and memory fragments. Problem solving recognises the contribution of experience, learning and knowledge.

### 3.6.3 Types of information used by health managers: empirical findings

Studies which examine what information is used in decision-making have been reviewed in Chapter 2 - The Literature Review. Many studies point to the value of information from the HIS in managing programmes and service improvement, as for example in Stansfield et al. (2006), but a small number of other studies which look more broadly at what information is actually used in decision-making suggest that, in addition to information from the HIS (or even preferentially), other forms of information are also used. These forms of information have been given different labels across the studies as shown in Table 3.2.

**Table 3.2. Empirical research identifying the use of different forms of information by health managers**

Study	Label used	Examples or categories suggested
Mintzberg, 1975	<i>media of information</i>	<u>Categorization:</u> <ul style="list-style-type: none"> <li>• documents,</li> <li>• telephone calls,</li> <li>• scheduled and unscheduled meetings, and</li> <li>• and observational tours.</li> </ul>
Daake et al., 2004	<i>informal data</i>	Opinion, stories, illustrations, analogies and metaphors, and some vague references to regulations and laws based on personal experience.
Mintzberg, 2006	soft information	Gossip, hearsay and speculation; tone of voice and chance to interact.
Moahi, 2000	<i>informal and interpersonal information sources</i>	office discussions, telephone conversations, personal connections, verbal reports.
Mutemwa, 2006	<i>other forms of information outside the HMIS</i>	<u>Categorisation:</u> <ul style="list-style-type: none"> <li>• written,</li> </ul>

		<ul style="list-style-type: none"> <li>• verbal,</li> <li>• observational,</li> <li>• experiential,</li> <li>• and training.</li> </ul>
MacDonald et al., 2008	<i>internal information</i> (created within the organisation, and including both implicit knowledge and explicit information)	Implicit knowledge - information gained experientially and through intuition, including awareness of decision complexity, participant's confidence in their own judgement; Explicit information – reports, meeting minutes, policies, or practice guidelines.
Williamson & Kaasbøll, 2009	<i>soft information</i>	Information that a facility manager obtains from a facility <i>walk-about</i> ; information about local community experience.
Damtew et al., 2009	<i>tacit knowledge</i>	Sourced from communication with subordinates, colleagues, superiors and community; going out to see for themselves; interaction with patients and community members.

### 3.6.4 Defining knowledge

Knowledge means different things when viewed from different perspectives within and across different disciplines, such as philosophy, economics, knowledge management and organisational studies (Assudani, 2005). In both the health information system literature (already reviewed in Chapter 2 - Literature Review) and the knowledge management literature (reviewed here), knowledge has been defined in relation to data and information.

This approach to its definition is

important to this research, which set out to study information use but which, in the early stages of data collection and analysis, found that facility managers also used a more applied version of information which is synonymous with *knowledge* in the health information and knowledge management literature.

#### **Knowledge defined in relation to the data-information-knowledge continuum**

In the field of knowledge management (Nonaka, 1994) points out that terms *information* and *knowledge* are often used synonymously, but that there is a clear distinction. Davenport and Prusak (1998, p3) suggest this difference is intuitively understood: knowledge is “broader, deeper and richer than data or information”. They posit that knowledge is related to both data and information and that the differences are often a matter of degree rather than being

substantively categorical. While data is understood to be the raw facts, information is understood to be data that has undergone a transformation through processes of comparison, analysis or interpretation so that context and/or meaning has been added. In keeping with others in the knowledge management field, Davenport and Prusak understand knowledge to be derived from information. Davenport and Prusak offer four questions which, when applied to information, transform it into knowledge (Davenport & Prusak, 1998, p3):

*Comparison: how does information about this situation compare to other situations we have known?*

*Consequences: what implications does the information have for decisions and actions?*

*Connections: how does this bit of knowledge relate to others?*

*Conversation: what do other people think about this information?*

The definition given by Davenport and Prusak in their earlier seminal work is very broad. In their understanding, knowledge is made up of a variety of elements ranging from the factual to values, interpretation and insight. Importantly, knowledge is understood in relation to people; it exists within people, their artefacts and their practices (Davenport & Prusak, 1998, p5):

*Knowledge is a fluid mix of experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes imbedded not only in documents or repositories but also in organisational routines, processes, practices and norms.*

Davenport and Prusak, like others in the knowledge management literature, suggest that knowledge is, or should be, linked to action. Knowledge has been described as “information in context, together with an understanding of how to use it” (Galup, Dattero, & Hicks, 2002, p22). Maglitta (1996) suggests knowledge is “information made actionable”. Duncombe and Heeks (2001) go further in saying that information which is acted upon becomes knowledge.

The relation between data, information and knowledge has been called “the data-information chain” (Heeks, 1999) and the “knowledge hierarchy” (Davenport & Prusak, 1998; Hicks et al, 2007). In the knowledge hierarchy, value is added as one progresses towards knowledge.

Galup et al. (2002) use the example in Table 3.3 to illustrate the relationship between data, information and knowledge, and to demonstrate their added value for decision-making. They see data as discrete fact which is organised to become information and made into knowledge when it is shown in context and made actionable.

**Table 3.3. Galup et al.’s illustration of the relationship between information and knowledge**

	<b>Characteristic</b>	<b>Example</b>
<b>Data</b>	Discrete	50
<b>Information</b>	Organised data	The temperature is 50 degrees.
<b>Knowledge</b>	Information in context	If the temperature is below 50 degrees (Fahrenheit), a sweater may be needed to stay warm.

Source: Galup et al. (2002, p22)

Some extend the hierarchy or chain to include *wisdom* (Nissen, 2002) and also to *understanding* as a step towards wisdom. For example Ackoff (1996 cited in Hicks & Galup, 1999, p5) sees knowledge “as application of data and information to answer ‘how’ questions, Understanding as the ability to answer ‘why’ questions, and Wisdom as evaluated understanding”. McQueen (1998) suggests that understanding and knowledge are closely related and interdependent; he posits that being able to understand the meaning of information comes from having *experience* of the environment that the data was collected from. Van Lohuizen (1986, p28) writing about knowledge management in the policy process and decision-making, extends the relationship with the addition of two concepts: understanding (or insight) which he describes as “interpreted and synthesized knowledge” and judgement which is “weighted insight”.

### **Other approaches to defining knowledge**

Knowledge is not only defined in relation to information. Alavi and Leidner (1999) provide useful summaries of other understandings that exist in various bodies of literature, including knowledge management, organisational learning, economic and strategic management literature. In the field of economics, knowledge is often understood as an object that is commodified in products, systems or services (Winter 1998, cited in Assudani, 2005). This view has been taken up in organizational theory on firms, with knowledge seen as a resource

to be exploited for financial gain (Kogut & Zander, 1992). Assudani (2005) differentiates between knowledge as an input resource for organisations to do their work and knowledge as an output resource as seen in organisational learning and innovation. This builds on earlier work by Nonaka (1994). Table 3.4 provides an overview of work cited by Alavi and Leidner (1999) and Assudani (2005).

In knowledge management literature, a prominent view is that, in addition to being an object, knowledge is also a process. Zack (1999b, p46) defines knowledge “ both as a thing to be stored and manipulated and as a process of simultaneously knowing and acting - that is, applying expertise”. Blackler (1995) similarly argues that the term *knowing* is more apt than knowledge, as it is something that people do, rather than something that they have.

**Table 3.4. Different approaches to understanding knowledge**

Conceptualisation of knowledge	Example
<b>Object</b>	Knowledge resides in the head of the individuals ... knowledge is that which is known ... (Grant, 1996a in Alavi & Leidner, 1999) Knowledge is what the firm knows in term of best practices ... (Szulanski, 1996 in Alavi & Leidner, 1999) Knowledge of the firm is “what the firm knows about how to organize social relationships/ principles”. It is embedded in the organizing of social relationships and is relatively observable as opposed to organisational learning (Kogut and Zander, 1992, 1996 in Assudani, 2005, p34).
<b>Process</b>	“Knowledge can be viewed both as ... a process of simultaneously knowing and acting - that is, applying expertise” (Zack, 1999b, p46) What we know is both the knowledge we possess and that knowledge in action ... (Cook and Brown, 1999 in Assudani, 2005); (Nahapiet and Ghoshal, 1998 in Assudani, 2005). “Rather than regarding <i>knowledge</i> as something that people have, it is suggested that <i>knowing</i> is better regarded as something that they do” (Blackler, 1995, p1023).
<b>State of knowing</b>	Knowledge is “a state or fact of knowing” with knowing being a condition of “understanding gained through experience or study; the sum or range of what has been perceived, discovered, or learned” (Schubert, 1998 in Alavi & Leidner, 1999, p10).
<b>Access to information</b>	“... knowledge can be retrieved through access to documents and databases containing data and information which is vital to the successful operation of the organisation” (McQueen, 1998, p610).
<b>Capability</b>	Knowledge creation as a capability that influences action and gives competitive advantage to firms (Carlsson et al., 1996)

Source: Collated and edited from Assudani (2005) and Alavi and Leidner (1999) with additions by the researcher

In their review, Alavi and Leidner (1999) identify further definitions of knowledge used in the literature: knowledge as a state of mind or a *state of knowing*; here they refer to the work of Schubert (1998) as an example; knowledge as *a condition of having access to information*

(McQueen 1999 in Alavi and Leidner, 1999); and knowledge *as a capability with the potential of influencing action* (Carlsson 1998 in Alavi and Leidner, 1999).

### 3.6.5 Introducing key constructs of knowledge

Various classifications of knowledge elaborate the dimensions of knowledge, and speak to its nature or the different kinds of knowledge. This literature review will focus on the constructs which underlie taxonomies, some of which are presented as simple and some of which are combined taxonomies. These include the differences between tacit and explicit knowledge, and individual and collective knowledge. Finally a typology of knowledge developed by Zack (1999b) will be described.

#### Tacit and explicit knowledge

Polanyi (1966, p22) wrote a seminal book on tacit knowledge in which he describes its nature and structure. He offers but a passing definition of explicit knowledge as that which is “capable of being stated”. He argues that tacit knowledge is that which we know but which we cannot express. At the heart of his thesis is the following oft-quoted assertion (Assudani, 2005; Nonaka, 1994; Sveiby, 1996; Snowden, 2002): “*We know more than we can tell*” (Polanyi, 1966, p4). He uses the example of recognising a face in a large crowd. We know the face and can recognise it as distinct but would not be able to describe it fully to another person as it is more than a sum of the features.

Polanyi was influenced by Gestalt psychology (Koffka, 1935; 2013) which sets out a suite of principles whereby visual perceptions are organised into groups and subgroups; this allows complex scenes to be seen as groups of objects against a background, rather than just a confusing array of coloured dots. These principles are what allow us to make meaning of what we visually perceive. Polanyi goes further to suggest that such a set of integrating principles are developed through experience and that this forms part of the tacit knowledge through which we learn and all new knowledge is discovered:

*Gestalt psychology has assumed that perception of a physiognomy takes place through the spontaneous equilibration of its particulars impressed on the retina or on*

*the brain. However, I am looking at Gestalt, on the contrary, as the outcome of an active shaping of experience performed in the pursuit of knowledge. This shaping or integrating I hold to be the great and indispensable tacit power by which all knowledge is discovered and, once discovered, is held to be true” (Polanyi, 1996, p6)*  
[Emphasis added]

Polanyi explains how certain knowledge can be known but not expressed, by referring to a set of experiments conducted in 1949 by Lazarus and McCleary (cited in Polanyi, 1966). They presented individual participants with a large set of syllables; a few of these syllables which were repeated in the experiments were followed by an electric shock. With time, the participants came to predict the electric shock, but could not explain how they did so. The explanation given is that they were giving their conscious attention to the shock (the distal term) and not to the syllables (the proximal term), so although they learnt subconsciously which syllables were followed by the shock, they could not express this. The participants came to know both the shock-producing syllables and the shock. The former was tacit knowledge and the latter was explicit knowledge. Polanyi has also described this difference in terms of focal and tacit dimensions of knowledge with the following analogy:

*When we use a hammer to drive a nail, we attend to both nail and hammer, but in a different way .... The difference may be stated by saying that the latter (hammer) are not, like the nail, objects of our attention, but instruments of it. They are not watched in themselves; we watch something else while keeping intensely aware of them. I have a subsidiary awareness of the feeling in my palm of my hand which is merged into my focal awareness of my driving the nail. (Polanyi 1958 quoted in Sveiby, 1996, p381)*

In this analogy, focal knowledge is the object or phenomenon that is the focus of attention, while tacit knowledge is understood to be the tool that is being used; it is background knowledge which is used to handle that which is in focus.

Polanyi describes how a tool or a probe can be used to describe an external object, giving the example of a blind man using a white stick to feel his way around an environment to learn about and, come to know, the obstacles in it. He suggest that this might be seen as “the transformation of the tool or probe into a sentient extension of our body” Polanyi (1966, p16). What we feel externally with the tool we feel within our bodies. Similarly what we

sense through using tacit knowledge as a tool, we experience within ourselves. When this happens, Polanyi suggests that it is as though we “incorporate it into our body – or extend our body to include it – so that we come to dwell in it”. The notion of *indwelling* is important in Polanyi’s understanding of tacit knowledge. Tacit knowledge is that which cannot be taught, but which needs to be experienced. He refers to the work of two German philosophers to explain this further:

*Dilthey taught that the mind of a person can be understood only by reliving its workings; and Lipps represented aesthetic appreciation as an entering into a work of art and thus dwelling in the mind of its creator. I think that Dilthey and Lipps described here a striking form of tacit knowing as applied to the understanding of man and of works of art, and that they were right in saying that this can only be achieved by indwelling. (Polanyi, 1966, pp16-17)*

The notion of indwelling is also key to understanding how values are internalised. Polanyi uses the term *interiorization* in describing this. In the following quote, the phrase *proximal term* is similar to the understanding Polanyi presents of a tool, and is added in brackets, which are not in the original (Polanyi, 1996, p17):

*To interiorize is to identify ourselves with the teaching in question, by making them function as the proximal term [the tool] of tacit moral knowledge, as applied in practice. This establishes the tacit framework for our moral acts and judgments.*

Tacit knowledge, as described by Polanyi is therefore understood in terms of the general knowledge base that gives rise to all knowledge, that knowledge which is taken-for-granted, which cannot be expressed, which is based on experience, and which is seen and transferred in its practice; it includes norms and values.

Nonaka has drawn extensively on Polanyi’s work in developing his understanding of explicit and tacit knowledge. He distinguishes between explicit and tacit knowledge on the basis of whether it can be expressed and codified (explicit knowledge) or not (tacit knowledge):

*‘Explicit’ or codified knowledge refers to knowledge that is transmittable in formal, systematic language. On the other hand, ‘tacit’ knowledge has a personal quality, which makes it hard to formalize and communicate. Tacit knowledge is deeply rooted in action, commitment, and involvement in a specific context. In Polanyi’s words, it*

*'indwells' in a comprehensive cognizance of the human mind and body.* (Nonaka, 1994, p16)

Both Polanyi and Nonaka identify two different elements of knowing. Polanyi calls them the “more intellectual and more practical kind” (Polanyi, 1966, p7), while Nonaka applies them specifically to tacit knowledge and uses the terms *cognitive* for the beliefs, paradigm and viewpoints and *technical* for the know-how, skills and crafts. The technical knowledge is often context-specific and the cognitive knowledge “refers to an individual’s images of reality and visions for the future, that is to say, what is and what ought to be” and function as perspectives which help individuals make sense of their world. Alavi and Leidner (1999) suggest that, in individuals, conscious knowledge is an example of explicit knowledge while automatic knowledge (like riding a bicycle) is part of the subconscious, tacit knowledge. They posit that explicit knowledge is generalized while context is important in tacit knowledge. Choo (2002) puts forward similar definitions for tacit and explicit knowledge but separates out beliefs, assumptions and values from what is generally considered tacit and places them in a third, independent category of *cultural knowledge*. Collins defines tacit knowledge as “knowledge that appears to be located in society” and contrasts this with formal knowledge “which can be transferred in symbolic form and encoded into machines and other artefacts” (Collins, 1993, p116).

Many writers challenge the dichotomy that has developed in the understanding of knowledge as being either tacit and explicit in nature (Ambrosini & Bowman, 2001; Assudani, 2005; Kogut & Zander, 1992; Tsoukas, 2003), arguing that this was not present in Polanyi’s original work, which saw the foundation of all knowledge as tacit, and explicit knowledge by implication emerging from this tacit knowledge. Abernethy and Malina (2005) cite the work of Ambrosini and Bowman (2001) when they suggest that there is actually a continuum between the two:

*[T]he tacitness of knowledge is a matter of degree. At one extreme, knowledge is deeply ingrained and totally unavailable. At the other extreme, knowledge can be easily communicated and shared. In the middle lies knowledge that has the potential to be articulated. By asking the right questions, this knowledge can be tapped and made available to the organization. The knowledge remains tacit because nobody has*

*tried to articulate the knowledge, not even the holder of the knowledge* (Abernethy & Malina, 2005, p137)

*[K]nowledge can be more/less tacit or can be more/less explicit, but may not be either fully explicit or fully tacit* (Assudani, 2005, p36).

## **Individual and collective knowledge**

Writing in the field of organisational theory, Lam (2000) identifies an ontological dimension of knowledge, that the locus of knowledge can be either the individual or the collective. She sees individual knowledge as that possessed by the individual, consisting of both cognitive knowledge and the *know-how* to perform work within the organisation. In contrast, collective knowledge is that knowledge which is shared, and includes that which is generally agreed to and expressed in rules, procedure and routines, and shared norms.

Lam's understanding of explicit knowledge (Lam, 2000), either individual or collective, is relatively straightforward. Individuals can be taught that which is codified and expressed as can collectives. For example, collectives such as professions agree to and follow the same syllabus, which becomes the collective knowledge of that grouping. In organisations, there are rules and practices which are codified in induction manuals, and taught to new recruits: thus it becomes collective knowledge.

The nature of tacit knowledge is more nuanced in knowledge management literature: Polanyi (1966) and Nonaka (1994) understand tacit knowledge to be deeply personal, as it emerges from the individual's experience. Sveiby (1996, p380), drawing on the work of Polanyi (1958,1966), argues that while tacit knowledge is personal it is not private, in that it is also socially constructed:

*Socially conveyed knowledge blends with the experience reality of the individual. New experiences are always assimilated through the concepts that the individual uses and which the individual has inherited from other users of the language.*

Nonaka (1994) posits that tacit knowledge can be shared through a process he calls *socialization*, which means that knowledge which is individual can also become collective.

The definition of organisational culture put forward by Schein (1996, p236) includes aspects which Polanyi (1966) and Nonaka (1994) considers as tacit knowledge - norms and values, and mental frames:

*the set of shared, taken-for-granted implicit assumptions that a group holds and that determines how it perceives, thinks about, and reacts to its various environment.*

In this definition, tacit knowledge is collective, in that it is shared between individuals and groups. Organisational culture is however a contested construct (Parker & Bradley, 2000); there is debate whether organisations *have* culture (either a single culture or multiple subcultures) or whether as social entities, organisations are “culture-bearing milieus” (Bloor, 1999, p163) . It is in the former understanding that organisational knowledge can be seen as a collective form of tacit knowledge.

### 3.6.6 Taxonomies of knowledge

#### Explicit-tacit and individual-collective

Various taxonomies of knowledge have been developed, some using the constructs described in the preceding section. The tacit-explicit divide has in fact been used as a taxonomy in its own right (Alavi & Leidner, 1999).

Collins (1993), writing about how scientists follow rules and patterns in scientific practice and what knowledge can be mechanised, describes four types of knowledge: knowledge that can be transferred in symbols - other writers such as Blackler (1995) call this *encoded* knowledge - and knowledge that is embodied, embrained and encultured. He uses the example of a professional tennis player to explain the term *embodied*. If all knowledge of how to play tennis was passed from a professional to a novice, the novice would still not be able to serve like a professional, as his arms lack the bone structure and muscle development to do what the mind says. Collins then argues that some knowledge has to do with the physical nature of the human brain, how neurons are connected, what neural pathways have developed and the chemistry of brain: this is *embrained* knowledge. An example would be how an emotional response to a stimulus is part of a person’s knowledge (Gobbini & Haxby,

2007). Collins describes *encultured* knowledge using the example of language: the “right way to speak” is determined by the social group, not the individual.

Blackler (1995), coming from organisational studies, reviews the images of knowledge in the literature and describes a fifth type, *embedded* knowledge. The way the different types of knowledge are understood in organisational studies differs slightly from the explanations put forward by Collins (1993). Blackler describes embrained knowledge as conceptual skills and cognitive knowledge and cites the work of the philosopher, Ryle (1945), who referred to this as *knowledge that* while James (1950) called it *knowledge about*. Blackler points out that it is this concept which is used by Argyris and Schön (1978) in describing double-loop learning as “an explicit recognition and reworking of taken-for-granted objectives” (Blackler, 1995, p1023). In addition, Blackler describes embodied knowledge as action-orientated and only partly explicit; again he cites Ryles who called this *knowledge how*. Encultured knowledge is describes as shared understandings such as cultural meanings and ideologies, which are socially constructed, while embedded knowledge is that which “resides in systemic routines” in institutions and social systems (Blackler, 1995, p24). Finally, encoded knowledge is that which can be recorded in books, manuals and codes of practice.

Lam (2000), also writing in organisational studies describes four of these types in a typology based on the combination of what she calls the epistemological axis (explicit-tacit) and the ontological axis (individual-collective). This is shown in Figure 3.7.

	individual	collective
Explicit	Embrained knowledge	Encoded knowledge
Tacit	Embodied knowledge	Embedded knowledge

**Figure 3.7. Lam’s four-fold typology of knowledge**

Source: Lam (2000, 491)

In Lam’s model, embrained knowledge is the explicit, theoretical knowledge possessed by individuals; encoded knowledge is documented, codified knowledge that has been formalised: it is also explicit but is collective in that it is shared between individuals and

across groups. Embodied knowledge is action-orientated and context specific. It does not need to be conscious, as a large part of it is automatic and is seen in practice: it falls in the tacit realm. Embedded knowledge is the collective form of tacit knowledge; it is found in organisational routines and practices, and is based on shared beliefs and understandings.

## **Know-that and know-how**

In philosophy and cognitive psychology an important distinction is drawn between *know-that* which is understood as factual knowledge about something, and *know-how* which is knowledge about how to perform a task or activity. This distinction was first described by Ryles (1945, p1), who questioned the prevailing thinking that knowledge (or what he called *intelligence*) was a *special faculty* that required *acts of thinking*, and that any practical knowledge could only be *clever* in as far as it was accompanied by acts of thinking too. He presented an argument which showed the distinction between “knowing that something is the case” and “knowing how to do things” and argued that the latter (*know-how*) necessarily precedes the former:

*A scientist or an historian is primarily a man who knows how to decide certain sorts of questions. Only secondarily is he a man who has discovered a lot of facts. He couldn't discover any particular truths unless he knew how to discover.* (Ryle, 1945, p16)

Ryles introduces phrases such as *technical skill*, *practice reason* and *intelligent performance* to describe what he called *knowing how*.

The distinction between *know-that* and *know-how* has subsequently been studied extensively in cognitive psychology, and given the labels *declarative knowledge* and *procedural knowledge* respectively (Nickols, 2000). Procedural knowledge is understood not just as a method of how to do something, broken into steps (this would be declarative knowledge), but *knowing-in-the-doing*. Nickols (2000) suggests that this is by necessity tacit, but that it can be seen in the doing. He gives the example of riding a bicycle – it is obvious that the cyclist knows how to ride, but most could not explain it fully in words.

## Zack's expanded typology

Another taxonomy of knowledge found in the knowledge management literature is presented by Zack (1999a, 1999b, 2001). He includes declarative and procedural knowledge in his typology but differs from Nickols (2000) in suggesting that procedural knowledge can be explicit. He believes that this explicit *know-how* is valuable to production in firms competing in the knowledge economy. Zack then adds another three types of knowledge: causal knowledge, relational and conditional knowledge. The last category is also sometimes called contextual knowledge (Zack, 1999b).

In Zack's typology, declarative knowledge is termed *know-about* and corresponds to the notion of *know-that* or of knowing the facts. It represents the "shared, explicit understanding of concepts, categories, and descriptors" (1999b, p46) and the facts about a subject. For people to be able to share these facts there needs to be a shared understanding of how they are represented and categorised:

*It can be represented as a hierarchical classification scheme (Bobrow and Norman 1975) such as that underlying the Dewey decimal system, the charting of genus and species of life forms, a bill of materials, or a table of contents. Effective communication and sharing of knowledge requires the members of an organization to agree on the labels, categories and distinctions used to represent the things important to the organization (Rogers & Kincaid 1981; von Krogh and Roos, 1995). (Zack, 2001, p26)*

Procedural knowledge is "knowledge of how something occurs or is performed" (1999b). It is concerned with processes, actions and sequences of events. Zack further explains (2001, p26):

*Procedural knowledge, or knowledge how, refers to the understanding of an appropriate sequence of events or the ability to perform a particular set of actions (Gioia and Poole, 1984). This may include organizational ceremonies and rituals as well as everyday operating procedures and routines (Cohen and Bacdayan, 1994). Procedural knowledge can be represented as ordered sequences of events associated with particular roles and relations. Shared procedural knowledge enables efficient coordinated action to take place.*

Causal knowledge (*know-why*) is particular knowledge about causes and consequences and includes the “rationale for actions and conclusions” (Zack, 1999b, p47). It is about understanding why something happens, the chain of events of the contributing factors. It is also about understanding the results that a particular action, intervention or change in contributing factors will have. Zack explains how this form of knowledge is often represented and transferred in organisational settings (Zack, 2001, p26):

*Causal knowledge can be formally represented by describing the causal links among a set of factors (Schank, 1975, Weick and Bougnon, 1986), but more often is less formally represented as organizational stories (Schank, 1990). Shared stories provide a means for organizations to develop consensus about why particular actions should be taken or how best to achieve some goal (Boje, 1991).*

In Zack’s typology, relational knowledge (*know-with*) is about understanding the relationships between different types of units of knowledge (Zack, 2001). It is new knowledge that emerges when different knowledge is put together. He describes it as follows (Zack, 2001, p26):

*For example, learning and innovation is often the result of creating or modifying relationships among existing and seemingly disparate concepts and ideas. Applied to organizations, firm performance is strongly related to knowledge of how the resources and competences of the firm relate to one another (Black and Boal, 1994; Penrose, 1959; Spender 1996). Developing new products and markets is often the result of recombining existing resources and competences rather than acquiring new ones (Grant, 1996a; Schumpeter 1934), and failures are similarly the result of not understanding how those resources relate.*

This understanding of relational knowledge is similar to that which has emerged in the field of mathematics, computer science and the cognitive sciences (Halford, Wilson, & Phillips, 2010), which sees it as a prerequisite for higher order thinking. It is the basis of analogous reasoning, which sees one concept in relation to another. *Knowing with*, in this typology, does not refer specifically to human relationships. It is different from the notion of relational knowledge put forward in participatory action research by Park (2006). Within participatory action research, the knowledge that *ordinary* people (i.e., non-professional research partners

in the community) bring to a research project, is understood to be relational in two senses: first it is a cognitive and affective knowing of people; and second it is knowledge that is co-produced with people. Zack's typology categorises the understanding of social and communication networks as one form of relational knowledge (Zack, 2001, p26):

*A particularly useful form of relational knowledge is understanding how the human resources of the firm relate to one another - that is, the social and communication networks of the firm through which knowledge is transferred or shared (Krackhardt and Hanson, 1993).*

This is similar to what Lundvall (2005) has termed *know-who*, a social knowledge based on knowing who knows what and how to use it.

Conditional knowledge (*know-when*) is about the "circumstances and intentions under which the knowledge was developed and is to be applied" (Zack, 1999b, p48). It is knowing when knowledge was generated and when it can be applied, the particular configurations of time/place/person/intention. He has also called this contextual knowledge (Zack, 1999b).

Zack suggests that the types of knowledge form a hierarchy (Zack, 2001) in organisational practice. *Know-about* is needed as a basis for communication; to this is added:

*how to perform their work and engage in collective behavior (procedural knowledge), leading to deeper knowledge of why things occur and which actions to take (causal knowledge). Relational knowledge of how the entire organizational system is internally and externally interconnected is the highest form of knowledge (Zack, 2001, p26).*

### **3.6.7 Knowledge management and learning organisations**

Penrose (1959) is credited with introducing the concept of a resource-based firm (i.e. organisation), which is understood to have an advantage over competitors because of its resources (Alavi & Leidner, 1999). In the 1980s and 1990s the notion of competitive advantage became focused on knowledge and led to a new field promoting the stewardship of knowledge as a valuable resource to be exploited for financial gain (Kogut & Zander, 1992). Snowden (2002) has described the first generation of knowledge management theorists and practitioners as being concerned with storing, accessing, and using knowledge

to the firm's advantage. He suggests that Nonaka introduced a second generation of knowledge management more concerned with knowledge *generation*. Nonaka et al. developed the influential SECI<sup>15</sup> model (Nonaka, Toyama, & Konno, 2000) which shows how knowledge is amplified by cycles of interaction between tacit and explicit and individual and collective knowledge. The name is an acronym for the four conversion processes which operate between these dimensions: *socialisation*, *externalisation*, *combination* and *internalisation*. Socialisation is understood to be the sharing of tacit knowledge among individuals. Externalisation is the articulation of tacit knowledge into explicit concepts. Combination is the bringing together and blending of different entities of explicit knowledge. Internalisation is the embodiment of explicit knowledge into tacit knowledge (Nonaka, Krogh, & Voelpel, 2006). Nonaka (1994) theorised that:

*... knowledge creation centers on the building of both tacit and explicit knowledge and, more importantly, on the interchange between these two aspects of knowledge through internalization and externalization.*

Drawing on complex adaptive systems theory, a third generation of knowledge management has been suggested by Snowden (2002). This is one which sees knowledge as a flow within communities of practice, not something to be generated and stored, but something that is generated around a particular problem when it requires solving. Snowden and his colleague, Kurtz (Snowden, 2002; Kurtz & Snowden, 2003) have developed a model, the Cynefin Framework, which maps out different types of decisions and decision situations into four quadrants: *known*, *knowable*, *complex* and *chaotic*. The notion of what is known and knowable corresponds to what Glouberman and Zimmerman (2002, in Marchal et al., 2014) describe as simple and complicated (see section 3.5.7). Snowden and Kurtz argue that complex decision-making requires working in the realm of the unknown and that decision-makers must therefore conduct small experiments in implementing different approaches and trying out innovations on a small scale, in an environment where it is *safe to fail*. From this experience, decision-makers will learn what strategies work and will begin to navigate the complexity. There is value in being part of informal networks to share emerging experience and knowledge, based on trust.

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<sup>15</sup> The SECI model is a model which conceptualises knowledge generation as a spiral of Socialisation-Externalisation-Combination-Internalisation.

Another body of literature which addresses how knowledge is generated in organisational settings is that of organisational learning. Organisational learning has embraced the notion, first proposed by Dewey (1938), of experiential learning. This notion was taken further by Kolb (1984, p26) who defined it as “the process whereby knowledge is created through the transformation of experience”. Levitt and March (1988) consider organisational learning from experience “an instrument of organizational intelligence” (Levitt & March, 1988, p333). Senge (1990) has described five disciplines for organisational learning: first, creating a shared vision with common understandings and values; second, surfacing the deep-seated assumptions and beliefs in what people think and which informs how they behave (he calls these beliefs “mental models”); third, developing self-awareness about oneself and the impact of ones behaviour on others (he calls this “personal mastery”); fourth, enabling team learning where teams engage in collective reflection and action learning; fifth, applying systems thinking to understand the inter-relationships that underlie complex problems to identify leverage points for and consequences of interventions.

Reflective practice emerges as particularly important in workplace learning and in generating new knowledge, both at the level of the individual (reflecting on how one’s own behaviour influences the system) and at the level of the collective. Dewey (1938) saw the potential for reflection to be a systematic and disciplined way of thinking and for it to be a meaning-making process. Schön (1983) introduced the concept of the “reflective practitioner” which Mann et al. (2009, p597) summarise as a professional who uses reflection “as a tool for revisiting experience both to learn from it and for the framing of murky, complex problems of professional practice”. Schön (1983) saw reflection as a way of surfacing that which professionals already knew and which could be observed in their action - their tacit knowledge – as well as generating new knowledge. Within professional development, reflective practice is seen as a tool to encourage self-knowledge, identify ongoing relevant professional learning needs and anchor the acquisition of new learning in experience (Mann et al., 2009). It is part of some of the undergraduate and postgraduate programmes for health professionals, and in some countries and professions is required for professional registration.

Various definitions of reflective learning have been put forward, with different interpretations (Lynch, 2000): Mann et al. (2009) define reflective learning as the “purposeful critical analysis of knowledge and experience, in order to achieve deeper meaning and

understanding” (Mann et al., 2009, p123). Moon (1999) suggests five stages which link reflective practice to the concept of learning: noticing; making sense, making meaning; working with meaning, and transformative learning. In Moon’s understanding, *noticing* indicates some form of awareness that a situation or experience is unusual, and needs to be further understood. Making sense is understood as introducing some understanding and cohesion to the problem, but not in relation to previous understanding. Making meaning begins to link this situation or experience to other understandings so that there is an integrated more holistic understanding of the experience or situation under consideration. Transformative learning represents the way that the new meaning is transformed into new learning.

### **3.6.8 Conceptualisation of information and knowledge and its evolution in this research**

Definitions for formal and informal information were developed during the design stage of this research and remained stable throughout the research process. From the start, formal information was clearly defined as a category with characteristics which were deductively applied in deciding if a certain type of information could be considered formal. Informal information was defined only in terms of what it was not i.e., *information that is not formal*, and so the nature of information in this category was inductively determined during the research process. Early in the first phase of data collection and analysis, knowledge emerged as an important resource used by facility managers to inform decision-making and was therefore included as an additional construct in the evolving conceptual framework. This is in keeping with the view of Gorry and Scott Morton (1989) who, in writing about Management Information Systems (MIS) – a relevant paradigm to this research which is particularly interested in HIS – identify knowledge and learning as crucial adjuncts to information from MISs. This view is further widely supported in the knowledge management literature (Maglitta, 1996; Duncombe & Heeks, 2001). In this research, knowledge was at first included in the category of *informal information* but it soon became apparent that some aspects of knowledge could meet the definition of *formal* too (such as professional training), and so it was given a separate category and label in the conceptual framework, as shown in panel III and IV of Figure 3.1.

During the research process it emerged that formal and informal information and knowledge were not only used but also generated in the routines and practices of management. This finding was understood to be congruent with theory in the field of knowledge management (Nonaka et al., 2000; Snowden, 2002) and organisational learning (Senge, 1990).

### **Formal information**

In this research, formal information was defined in the design stage. In thinking about what constitutes formal information, the characteristics of one obvious example, the information in the RHIS was considered. This information has been officially sanctioned for collection and use. There is a set of legitimised managerial processes which formalise and institutionalise its use, including decisions on what to collect, guidelines on how to decide what to collect, standard operating procedures on how to collect and how to validate it, conventions on how to analyse, document, and present it, formats for reporting on it and practices of reviewing it monthly in management meetings.

In considering these characteristics, it was recognised that the collection and collation of information from RHIS has to be standardised and highly regulated to be comparable and of use higher in the health system. It thus represents an extreme of what might be considered formal information. The core criterion for what is considered formal in this research is therefore guided instead by the purpose of this research. In exploring what information facility managers use in decision-making, and how this is influenced by the health system context, this research seeks to inform and strengthen health system support in generating and facilitating the use of the information that facility managers need. It is therefore interested in what the health system recognises as useful and hence legitimises and supports, by incorporating it into recognised, formal managerial processes and practices.

The definition of formal information used in this research is therefore information which has been formalised through a health management process or practice. As an example this would include the highly standardised RHIS, but also formal minutes of meetings, leave application forms and disciplinary counselling notes. Formal information is often quantifiable data that can be summarised for use at different levels of the health system; it may be routine or ad hoc. There are also examples of qualitative information.

## **Informal information**

In this research informal information was defined as “information that is not formal” and so the nature of this information and descriptive examples were allowed to emerge from the findings. Informal information included information which was about the local context, facility, staff, community and context, as well as information that was particular to specific staff members. This information was too detailed and peculiar to the setting or context to be aggregated meaningfully and was generally too voluminous to be passed up the levels of the health system to sub-district or district management. Crucially, it had not been formalised through organisational processes and practices, but was known locally to local actors, as it is about their setting and the specifics of their working environment.

## **Knowledge**

Knowledge, both tacit and explicit, individual and collective, emerged as important in the planning and management of health services. These constructs were not specified in the conceptual framework, but informed the researcher’s understanding of the knowledge that was being observed and that was spoken about in interviews, and became part of the lens through which the data was interpreted in the iterative rounds of analysis.

Knowledge was understood to include information that was applied or made actionable which is acquired through experience and learning, in addition to formal teaching. In describing the different forms of knowledge used, Zack’s typology was found to be useful and ontologically relevant, describing knowledge of different phenomena: facts (*know-about*), practical or procedural knowledge (*know-how*), causal knowledge of causes and consequences (*know-why*) and the circumstances under which particular knowledge applied (*know-when*).

## **3.7 Summary**

This chapter has described the theory which was drawn from the fields of management science, psychology and health systems research which have informed the development and evolution of the conceptual framework. Further it has reviewed the literature as a basis for developing particular definitions of the terms *formal* and *informal information*, and for the

adoption of a typology to describe different types of knowledge. The propositions generated from the conceptual framework are described in the next chapter.



# Chapter 4. Methods

## 4.1 Introduction

This chapter describes the research question, orientation and strategy used. It defines a set of key concepts and terms as they are used in this research. The role of theory is explored in generating a set of propositions that this research sets out to explore. The roles of research participants are explained, including that played by four facility managers who were co-researchers in this research, and their peer group. The methods of data collection and analysis are covered, as well as the strategies used to strengthen rigour through the research process. Lastly there is a discussion of the ethical challenges which arose in this research.

## 4.2 Research question, aim and objectives

The development of the research question has been described in Chapter 1 - Introduction. After a process of refinement the main research question that drove this investigation is an explanatory one: how do facility managers use information in decision-making, and how is this influenced by the health system context in which they work?

The aim of this research is therefore to explore how health facility managers in public primary healthcare facilities use formal and informal health information in decision-making, in the context of the district health system.

Six objectives were developed to meet this aim. They are:

- 1 To describe the scope (both expected and executed) of the decision-making repertoire required of public primary healthcare facility managers;
- 2 To explore how facility managers use informal information in decision-making;
- 3 To explore how facility managers use formal information in decision-making;
- 4 To explain how informal and formal information work together in decision-making;

- 5 To explain how the health system context influences facility managers' use of health information for decision-making;
- 6 To explore how facility managers can be supported in their use of information for decision-making through attention to management processes and practices across levels.

## 4.3 Research orientation

### 4.3.1 Qualitative research

This research uses qualitative research methods to explore the nature of information used at primary healthcare level, how it is used and how this is influenced by the health system context. Denzin and Lincoln warn that qualitative research needs to be understood in its historical context but offer the following generic definition:

*Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretative, material practices that make the world visible. These practices transform the world. They turn the world into series of representations, including field notes, interviews, conversations, photographs, recordings and memos to self. At this level, qualitative research involves an interpretative, naturalistic approach to the world.* (Denzin & Lincoln, 2005a, p3)

Qualitative research is particularly appropriate to answering questions of “How?” or “Why?” (Creswell, 1998). It is naturalistic in that it studies phenomenon-natural settings rather than devising experiments; it is interpretative in that it attempts “to make sense of, or interpret, phenomena in terms of the meaning that people bring to them” (Denzin & Lincoln, 2005a, p3).

### 4.3.2 Research paradigm and perspectives

A paradigm is a “basic set of beliefs that guides action” (Guba, 1990, p17) and is comprised of ontological, epistemological, axiological, and methodological assumptions. Ontology is concerned with the nature of reality. An important ontological debate is whether there is a

“captive social reality” and how to construct it (Snape & Spencer, 2003, p11). There are three main ontological positions: realism claims that there is an independent external reality; materialism agrees but claims that the real world exists only as far as it is held by material or physical features; idealism claims that reality is only knowable through how humans understand their social world. Relativism is understood to be a variant of idealism and holds that “there is no single shared social reality, only a series of alternative social constructions” (Snape & Spencer, 2003, p16).

This research adopts a relativist approach, seeing reality as socially constructed and multiple. It holds that reality is known by understanding the meaning given to a phenomenon by those who experience it, and as such, it is subjective and needs to be interpreted. Epistemology addresses how that reality is known (Creswell, 2003), as well as the relationship between the knower and the known (or investigator and participants). There are two main stances: positivism and interpretivism (Snape & Spencer, 2003). Positivism draws on methods of natural science research and aims to be objective and value-free, while interpretivism assumes that knowledge is context-bound, subjective and dependent on the meanings individuals attach to their actions. This research adopts the latter stance.

Axiology has to do with what is considered to be of intrinsic worth in the research process and in the research outputs (Watson, 2005), and whether value choices are explicitly included or excluded in research (Denzin & Lincoln, 2005b). This research recognises the intrinsic worth of the participation of those being researched (the facility managers) in the research process. Further, it accepts that the researcher’s values are not neutral and need to be accounted for in the research process and in the framing of knowledge, and so explicitly deals with this by incorporating reflexivity into the research methods.

Denzin and Lincoln (2005b) identify five main paradigms which are constructed out of the ontological, epistemological and axiological assumptions: positivism, post positivism, critical theory, constructivism and participatory paradigms. They have analysed the history of qualitative research and identify eight “moments in the history” which are characterised by the dominance of particular paradigms (Denzin & Lincoln, 2011). The same authors warn against working *across* paradigms, but suggest that it is possible to draw from different “perspectives”, which they understand to be less developed systems. This research started in

2010, in what Denzin and Lincoln call the “methodologically contested moment”, and draws on the constructivist paradigm but adds to this some participatory perspectives, in particular the notion that reality is not just socially constructed but *co*-constructed, and that participation is intrinsically of value. Denzin and Lincoln (2005a, p6) see the qualitative researcher as a *bricoleur*, literally a maker of quilts, also described as a *handyman* who uses whatever is available drawing on different perspectives and/or methods to find a solution that fits with the research question at hand:

*The theoretical bricoleur reads widely and is knowledgeable about the many interpretative paradigms ... He or she may not, however, feel that paradigms can be mingled or synthesised. That is, one cannot easily move between paradigms as overarching philosophical systems denoting particular ontologies, epistemologies, and methodologies. They represent belief systems that attach users to particular world views. Perspectives, in contrast, are less well developed systems, and one can move between them more easily. The researcher as bricoleur-theorist works between and within competing and overlapping perspectives and paradigms.* (Denzin & Lincoln, 2005a, p6)

In drawing on the constructivist paradigm, this research includes a variant posited by Gergen and Gergen (2007) which they call *social* constructivism, based on the belief that the origin of knowledge and meaning is social, arising not just from the working of the human mind but in interactions in human relationships. Similarly Creswell (2003) has identified the following features of what he calls “socially constructed knowledge claims” (Creswell, 2003, p8) which are congruent with the knowledge claims in this research and are loosely paraphrased as:

- individuals seek understanding of the world in which they live and work;
- they develop subjective meanings of their experiences which are varied and multiple, and are negotiated socially and historically;
- interpretation of meaning must focus on the specific contexts in which people live and work;
- researchers’ own background shapes their interpretation (which is why they must “position themselves” in the research, to acknowledge how their interpretation flows from their own personal, cultural, and historical experiences).

In drawing on participatory perspectives, this research has both epistemological and ethical (value-based) purposes. First, it draws on the work of Heron and Reason (1997) who critique the constructivist paradigm described by Denzin and Lincoln (2005b), where what is real “is

a mental construct of individuals” (Heron & Reason, 1997, p277). They argue that the constructivist paradigm does not allow sufficiently for *experiential* knowing, and that in seeing knowledge as a construct, there is a danger that it is thought to be only subjective. They posit that the nature of knowledge is not objective *or* subjective but both objective *and* subjective: it is transactional and interactive. This means that knowledge can only be *co*-constructed, and attempts to generate knowledge *must* therefore be participatory. Borg et al. (2012, p1) describe the epistemological assumption in participatory research as: “*knowledge is embedded in the lives and experiences of individuals and that knowledge is developed only through a cooperative process between researchers and experiencing individuals*”.

Second, the participatory paradigm has a strong axiological tenet, seeing participation as intrinsically valuable in itself, with a clear ethical and political imperative:

*People have a right and ability to contribute to decisions that affect them and to knowledge that is about them, and action research has an important place in the empowerment of people (Fals Borda & Rahman, 1991; Rahman, 2003; Selener, 1997). Thus, action research is a participative and democratic process that seeks to do research with, for, and by people; to redress the balance of power in knowledge creation; and to do this in an educative manner that increases participants’ capacity to engage in inquiring lives.* (Reason, 2006, p189)

The research perspectives informing this research are consistent with those framing the broader DIALHS project, which has adopted a participatory action research (PAR) approach (Lehmann & Gilson, 2014). Action research is relevant in that it “*seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities*” (Reason & Bradbury, 2001, p1). In the context of the DIALHS project “action” is understood to be reflective practice, as described in the next section.

### **4.3.3 Reflective learning**

In adopting social constructivist and participatory methodologies premised on co-creation, it becomes necessary to consider how such processes can be actualised. Dewey (1938) is an

early proponent of experiential learning and saw the potential for reflection to be a systematic and disciplined way of thinking, meaning-making, and, implicitly, knowledge generation. Reflective learning has become an important area of enquiry and a tool in the fields of education and organisational development (Schön, 1983; Mann et al., 2009). Various definitions have been put forward, with different interpretations (Lynch, 2000). Schön (1983) introduced the concept of the “reflective practitioner” whom he saw as a professional who uses reflection “as a tool for revisiting experience both to learn from it and for the framing of murky, complex problems of professional practice (Mann et al., 2009).

Schön recognises the tacit nature of much of what practitioners know and argues that this is evident in what they do, in their actions. He called this “knowing-in-action”:

*When we go about the spontaneous, intuitive performance of the actions of everyday life, we show ourselves to be knowledgeable in a special way. Often, we cannot say what we know. When we try to describe it, we find ourselves at a loss, or we produce descriptions that are obviously inappropriate. Our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff with which we are dealing. It seems right to say that our knowing is in our action. And similarly, the workaday life of the professional practitioner reveals, in its recognitions, judgments and skills, a pattern of tacit knowing-in-action. (Schön, 2001, p124)*

Reflective practice is therefore an effective tool to surface tacit knowledge.

Further, the idea of reflective practice is closely aligned with that of learning from experience as described by Kolb (1984, p26): "*learning is the process whereby knowledge is created through the transformation of experience*". Importantly Kolb understood learning to be grounded in experience and to be a process of creating knowledge. Mann et al. (2009) define reflective learning as the “purposeful critical analysis of knowledge and experience, in order to achieve deeper meaning and understanding” (Mann et al., 2009, p123). Moon (1999) emphasises the importance of emotions as a signal that an issue is important and that reflection will yield significant learning.

In this research, reflective learning has been used within the context of participatory action learning. The *action* component of action learning is understood within the wider DIALHS

project to include reflective practice. Kemmis (2001, in Reason, 2006, p193) has argued that the “formation of communicative space” is in itself a form of action. The *learning* in this research is based on reflective practice which involves both surfacing tacit knowledge and learning from experience (in this instance, the practice of management). The opportunity for individual reflective learning was embedded into the individual engagements with the four index facility managers, while collective reflective learning was facilitated in the peer workshops: this is described in more detail in the sections below. The approach adopted was informed by Moon’s identification of five stages in reflective learning: noticing; making sense, making meaning; working with meaning, and transformative learning. These stages were not followed prescriptively but they guided the intention and direction of the learning. In Moon’s understanding, *noticing* indicates some form of awareness that a situation or experience is unusual and needs to be further understood. *Making sense* is understood as introducing some understanding and cohesion to the problem, but not in relation to previous understanding. *Making meaning* begins to link this situation or experience to other understandings, so that there is an integrated more holistic understanding of the experience or situation under consideration. *Transformative learning* represents the way that the new meaning is transformed into new learning.

This approach to doing reflective learning was already well-established within the DIALHS project when this research started. It was developed as method of engaging health service colleagues in understanding themselves and the health and management problems they confront in their work. Collective reflection was used as a tool for surfacing and sharing tacit knowledge about values, mind-sets, experiences, and for the collective framing of problems and problem solving, and was subsequently documented (Elloker et al., 2013; Daire & Gilson, 2014). As a research team the academic colleagues in the DIALHS project also set time aside for regular collective reflective practice as a way of systematically thinking about the emerging learning and its meaning in relation to the broader project goals of district health system strengthening, and improved governance in PHC (Lehmann & Gilson, 2014).

## 4.4 Research strategy

The overall research strategy in this research is a case study, one of the well-established forms of qualitative research (Creswell, 2003; Merriam, 2009) though it may include quantitative methods too (Yin, 1994). Yin argues that a case study is defined by the focus on a case, rather than a particular method. Merriam considers a case to be a “bounded phenomenon” and gives the following definition for a qualitative case study:

*A qualitative case study is an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, a process, or a social unit.*  
(Merriam 1998, p27)

Yin’s definition (2013) emphasises the inclusion of context:

*A case study is an in-depth inquiry into a specific and complex phenomenon (the ‘case’), set within its real-world context.* (Yin, 2013, p231)

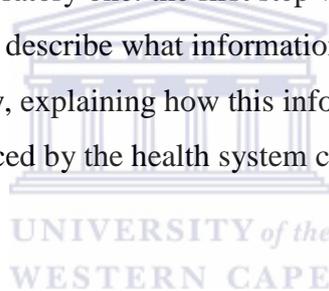
The case study was chosen as research strategy as it is congruent with the constructivist and participatory research perspectives. Further it has been identified as useful in understanding complex phenomena (Woolcock, 2013; Yin, 2013) and systems (Laws & McLeod, 2004) and as such is relevant to Health Policy and System Research (Gilson et al., 2011). Its particular strengths are its ability to deal with both context and complexity (Yin, 2013). In this research, context was an essential aspect of the phenomenon under investigation with the research seeking to explore how context influenced the use of information in decision-making by primary healthcare facility managers. The phenomenon was understood to be inherently complex, as the health system is understood to be a complex adaptive system (Marchal et al., 2014). A case study design is further appropriate in this research, given the nature of the research question: it is a “how” question, and because the question was asked about a current practice over which the investigator had little control (Yin, 1994). Case study research is also a strategy that lends itself to an interpretative paradigm (Stake, 2005).

There is a strong tradition of case study research in health information literature, often on the development or implementation of new HISs (Byrne, 2003; Gladwin, 2003; Kimaro & Sundeep, 2007; Kimaro & Nhampossa, 2005; Mosse & Sahay, 2003; Heywood & Campbell,

1997); Mutemwa (2006) also used a case study strategy in his exploration of appropriate information for district health management in decentralised health systems.

The particular design of a case study in this research is a holistic multiple case study, consisting of three cases. Following Mutemwa's (2006) fruitful exploration of the information used by district managers in strategic decision-making, the cases (or units of analysis) are areas of management for which primary healthcare facility managers are responsible and which involve a number of decisions and decision processes. Stake (1995) holds that a case is "a thing" or "an entity", not a function. Lincoln and Guba (2000), however, offer a broader conceptualisation of what might be considered a case, including the notion of "a responsibility", which is applicable in this research: here the three areas of management decision-making gave opportunities for areas of responsibility to be examined.

The case study started as an exploratory one: the first step was to collect data and analyse it sufficiently to define the case and describe what information was being used. As analysis progressed, it became explanatory, explaining how this information was used in decision-making and how this was influenced by the health system context.



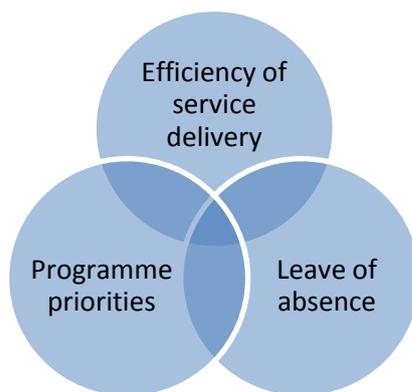
## **4.5 Case selection**

In line with the participatory approach adopted in this research, and the broader DIALHS project, the cases were selected in conjunction with the sub-district managers, acknowledging the particular value of their knowledge of management challenges and opportunities in the sub-district. Three cases were identified as potential levers of health system strengthening at facility level, and were thought to hold the promise of elucidating how information is used in critical decision-making processes. Further the three cases constitute three areas of management, representing the range of different types of facility-level decisions and decision processes. This includes both highly-scripted decisions where clear guidance existed on how to make the decision (in the form of procedural guidelines), and unscripted decisions where the facility manager had to use discretion and judgement. Finally they cover different aspects

health management (e.g. from logistical administration to *people management*<sup>16</sup>). As Yin (1994, p45) notes:

*Every case should serve a specific purpose within the overall scope of inquiry. Here, a major insight is to consider multiple cases as one would consider multiple experiments - that is, to follow a 'replication' logic.*

The three cases selected were: improving efficiency of service delivery, implementing programme priorities, and managing leave of absence. Each case was defined as an area of management responsibility and consisted of many individual decisions related to that area. Instead of following discreet decisions from problem identification to resolution, as done by Mutemwa (2006), the researcher worked with decisions as they surfaced, during the times of observations and interviews. The interviews allowed for some retrospective collection of data related to a particular decision and to the case area, but the researcher did not attempt to systematically follow all decisions from start to end. The boundaries of the cases were only defined during the first stage of data collection and analysis, when it was possible to identify the key sets of decisions that were taken in that area. These areas of responsibility were understood to be embedded in national, provincial, district and local contexts. The three cases were also understood to be interlinked, as shown in Figure 4.1. For example, facility managers were often simultaneously engaged with managing unplanned leave of absence (e.g. cancelling training or recalling staff to the facility), while removing bottlenecks to service delivery (e.g. reducing client intake, managing flow and reallocating work).



**Figure 4.1. Interlinking cases of management decision-making in this multiple case study**

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<sup>16</sup> People management is used here to refer to the interpersonal management of individuals and collectives.

## 4.6 Key definitions and terms use

A number of concepts and terms were defined by the researcher during the course of the study and their use represents a particular conceptualisation within the context of this research. They are set out in functional clusters rather than alphabetically and described here.

### Health information system-related terms

This set of terms was important to define as they have been used in different, even contradictory, ways in the literature (Lippeveld and Sauerborn, 2000; Health Metrics Network, 2008b). There is some confusion whether the HIS or the HMIS is the overarching system in the application of these terms. *Developing Health Management Information Systems: A Practical Guide for Developing Countries* (World Health Organization Regional Office for the Western Pacific, 2004) draws on definitions used in earlier WHO technical documents and sees the HMIS as the larger system with the HIS as that aspect that deals with the service delivery records. It defines a HIS as “(a) system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services” and a HMIS as “(an) information system specially designed to assist in the management and planning of health programmes, as opposed to delivery of care”. In South Africa these definitions have been adopted in the District Health Management Information System Policy (Department of Health, 2011a) and the term HMIS is applied to mean the total HIS. In empirical literature in the 1990s and early 2000s the term HMIS has been used to refer to both health service and health resource data (see for example Chaulagai et al., 2005; Odhiambo-Otieno, 2005a; Odhiambo-Otieno, 2005b; Mutemwa, 2006). In contrast Aqil, Lippeveld and Hozumi (2009, p10) consider the HMIS as synonymous with the RHIS which they define as “[r]eferring to any data collection conducted regularly with an interval of less than 1 year in health facilities and their extension in the community”. They see this to be a sub-set of the larger HIS. The separation of routine and non-routine is stressed in some descriptions of health information systems (RHINO, 2001).

In acknowledging the confusion in terms both Lippeveld and Sauerborn (2000) and the Health Metrics Network (2008b) suggest deliberately avoid the term HMIS. *Framework and Standards for Country Health Information Systems* (Health Metrics Network, 2008b, p33)

uses the term *health service data sources* to describe the records that “are based on service-generated data derived from health facilities and patient-provider interactions covering care offered, quality of care, treatments administered” and see this as synonymous with the terms HMIS and RHIS. They reserve the term HIS exclusively to describe the whole health information system, which they define as incorporating both population-based and institution-based sources. This is consistent with the usage promoted in *Design and Implementation of Health Information Systems* (Lippeveld and Sauerborn, 2000). The following terms are therefore used in this research:

A *health system* is understood to be “all the activities and actors whose primary purpose is to promote, restore or maintain health” (World Health Organization, 2000).

A *health information system (HIS)* is understood to be “an integrated effort to collect, process, report and use health information and knowledge to influence policy-making, programme action and research” (Evans & Beaglehole, 2003, p116). It refers to the “total information system, incorporating both population-based and institution-based sources” (Health Metrics Network, 2008b, p22).

A *routine health information system (RHIS)* is understood to be a sub-set of the health information system; it collects information from health service data sources (Health Metrics Network, 2008b). This data is generally collected routinely and is used to manage service delivery. The RHIS has also been described as “any data collection conducted regularly with an interval of less than 1 year in health facilities and their extension in the community” (Aqil, Lippeveld, & Hozumi, 2009, p10).

A *health management information system (HMIS)* is understood to be used variously in the literature and is largely synonymous with a routine health information system (RHIS). It is not used in this research.

A *human resource information system (HRIS)* is understood to be a sub-set of the health information system which collects and manages all information that relates to human resources (including the conditions of employment, staff development and training, and use of leave).

## **Types of information**

*Formal health information* is understood to be information that is formalised by a legitimised managerial process or practice which formalises and institutionalises its use.

*Informal health information* is defined as “information that is not formal” and as such is an open category which includes all information that is not formalised by health management practices and procedures, but which informs decision-making.

*Knowledge* is understood to include information that was applied or made actionable, which is acquired through experience and learning, in addition to formal teaching. It may be explicit and/or tacit in varying degrees.

## **Decision-related terms**

A *decision* is understood to be an instance of decision-making and to be “a specific commitment to action (usually a commitment of resources)” (Mintzberg et al., 1976).

A *decision process* is a process, spanning an unspecified length of time, which is constituted of “a set of actions and dynamic factors that begins with the identification of a stimulus for action, and ends with the specific commitment to action”.

*Decision-making* is the act of engaging with decision processes.

*Decision space* is the space or *margin of choice* that an agent (in this research, the facility manager) has to make decisions and, in the context of decentralised health systems, is linked to the concept of autonomy (Bossert, 1988; Bossert & Beauvais, 2002).

## **Research-related terms**

A *co-researcher* is a research participant who has actively participated in the research decisions regarding which data collection methods to use when, who has collected and analysed data, and has been significantly involved in the interpretation of findings.

An *index facility manager* in this research is one of the four primary healthcare facility managers who participated as co-researchers in phase one of this research, and who

subsequently participated with their peer group in the workshop series in phase two of this research.

An *index facility* in this research is a facility managed by one of the four primary healthcare facility managers who participated as co-researchers in phase one of this research.

A *peer facility manager* is a facility manager who is a peer to an index manager in this research and who participated in this research within the context of the peer group; such a manager was observed in facility managers meetings in phase one of this research, and participated in the workshop series in phase two of this research.

A *facility manager peer group* is the group of facility managers who are the peer group to the index facility managers in this research.

A *case* in this research is an area of management for which primary healthcare facility managers are responsible, and which involves a number of decisions and decision processes.

A *thick description* refers to the detailed account of field experiences in a case study in which the researcher makes explicit the patterns of cultural and social relationships and puts them in context (Holloway, 1997). While often used synonymously with “case report”, in this research the term refers specifically to the description of each case (one for City Health and one for MDHS) which was collated from the interviews with and observations of index facility managers in phase one.

A *case report* is “a narrative that makes the case comprehensible” (Stake, 1995, p124). While often used synonymously with “thick description” in this research the term refers specifically to the description of each case which brings together the thick descriptions generated in phase one and the data from the workshop series in phase 2 as one coherent narrative for the case.

### **Setting-specific terms**

A *sub-district* is understood, in the context of this research, to be a geographical area which is the primary administrative unit for managing and co-ordinating health services, community involvement and intersectoral actions for health. The two sub-districts involved in this

research (Mitchells Plain and Klipfontein) each have a population around 400 000 to 500 000 and, although approximately double the size of the World Health Organization-defined concept of a district (Tarimo & Fowkes, 1989), they have the same function. In MDHS, the two sub-districts have been grouped together and called a substructure and are managed as a unit. In this research, the term sub-district is used as a generic term to refer to both a sub-district (City Health) and a substructure (MDHS).

*A facility manager supervisor* is understood, in the context of this research, to be the manager responsible for supervising and supporting all the facility managers in the sub-district, including the Personal PHC and Programme Manager (City Health), and the PHC Manager (MDHS).

*A facility manager* is understood, in the context of this research, to include both the designation clinic manager (City Health) and facility manager (MDHS). It denotes a manager of a primary healthcare facility which in this setting can be a clinic, community day centre or community health centre, as described in section 1.7.3.

## **4.7 Theory development**

Theory is understood to offer “a general explanation of what is going on in a situation” (Gilson, 2012, p54) and to be useful for generating propositions of how different concepts interact. Theory posits relationships between different concepts.

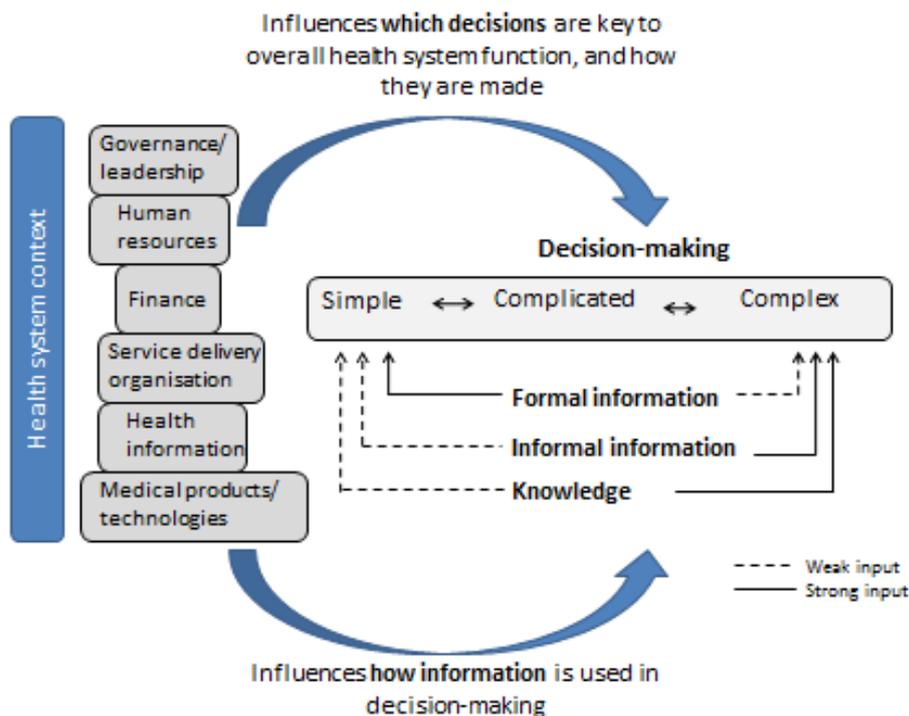
The development of the conceptual framework, and the changes that it underwent during planning and early data collection and analysis, have been described in detail in Chapter 3 - Conceptual Framework. In this section the propositions that arose from the conceptual framework are described.

In the conceptual framework informing this research, three theoretical constructs – information, decision-making and health system context - were understood to be in relation to one another as shown in Figure 4.2. It is these relationships that are important in generating the propositions that guided the research process. These relations have been described in

Chapter 3 - Conceptual Framework, but are repeated here for ease of reference. First, the health system context was understood to determine which key decisions were potential levers for health system strengthening (and this was used as the rationale for the selection of decision cases to be investigated). Second, the health system context was seen to influence how facility managers used information in their decision-making processes. Third, the nature of the decision was thought to influence which type of information was more likely or more heavily used. It is these relationships which gave rise to the propositions which the research then set out to explore.

Earlier versions of the conceptual framework (I and II) included mode of decision-making and types of decisions, as constructs. In early data collection, it became clear that determining whether a decision was made intuitively or rationally was a subjective matter of judgment, so this line of exploration was therefore abandoned. In the early stages of analysis, it became apparent that most of the decisions made by facility managers were operational or managerial, and very little were strategic, so differentiating into types of decisions was not a helpful distinction. Also simple administrative decisions were often inter-connected with more complex managerial ones. The following propositions related to these constructs were therefore discarded:

- The relative use of formal and informal information will depend on the mode of decision-making.
- The relative use of formal and informal information will depend on the types of decisions (strategic, operational and administration) as defined by Gorry and Scott Morton (1971).



**Figure 4.2. Field version of the conceptual framework**

In the light of this version of the conceptual framework, refined in the field, the following propositions were set out:

1. The health system context - consisting of forms of governance and leadership, the capacity and orientation of human resources, funding flows, the organisation of health service delivery, quality of HISs and systems of procurement of medical products and technologies - determines which decision-making processes are key to the overall health system functioning.
2. The health system - as a whole and its interconnected component parts - influences what information managers use in decision-making, and how they use it.
3. The health system consists of actors who interact with and are influenced by one another other; the nature of these relationships influences what decisions are taken and what information is used and how.
4. The nature of management and decision-making is relational, in that it requires facility managers to engage with other actors. These engagements allow insights into what information is used and how.
5. Facility managers use formal and informal information and knowledge in decision-making.

6. The relative use of formal and informal information and knowledge will depend on the nature of the decisions and decision-processes.
7. The relative use of formal and informal information and knowledge will depend on what information is made available by the health system context.
8. Attention to the health system design - as a whole, and in terms of interconnected component parts - is necessary to support facility managers in decision-making.

## 4.8 Research participants and roles

In total, 20 facility managers were involved in this research, as shown in Table 4.1. In keeping with the participatory perspective underlying this research, four facility managers (three from City Health, City of Cape Town and one from Metro District Health Services, Provincial Government of the Western Cape) participated as co-researchers and were involved in iterative cycles of data collection and collaborative analysis in phase one and two of this research. This is described later in Figure 4.4. In the context of this research, they are also referred to as *index facility managers*, to differentiate them from their peer group, who participated in phase two of this research. The selection of these co-researchers was from the Mitchells Plain Sub-district *only*, as this was the main setting of the DIALHS project. It was purposeful to include both City Health (three of the eight City Health facility managers) and MDHS (one of the three MDHS facility managers), as well as to include one of the two managers of larger Community Health Centres. The selection was also made in conjunction with another DIALHS sub-study, *The transitions process from nurse to facility manager* (Daire & Gilson, 2014), which ran in parallel to this research. To reduce the impact of research on managerial responsibilities, facility managers who participated in the other sub-study were not eligible to also participate as co-researchers in this research, in phase one. However they could participate as peer group facility managers in phase two. At the time that this research started, there was only one male facility manager in the sub-district. He could not be selected as a co-researcher in stage one, as he was already participating in the other study.

The co-researchers participated in the in-depth data collection of phase one. They were interviewed and participated in reflective learning, story telling, recalling critical incidents,

and interpreting mindmaps. They were observed in their facilities and in sub-district meetings. They reviewed and amended the draft copies of the thick descriptions describing their practice. One of the four index facility managers (a City Health facility manager) left the sub-district after the first phase of the research. Her replacement in City Health joined as a participant in the peer group in phase two of the research.

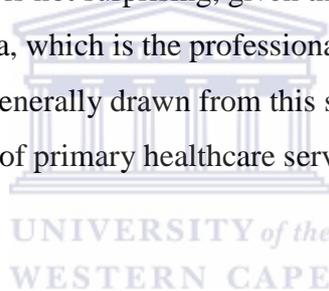
**Table 4.1. Participants’ age, gender and work experience and participation in this research**

Organisation	Age (years)	Gender	Experience in primary healthcare services (years)	Experience in management (years)	Phase one – individual work	Workshop on leave of absence	Workshop on efficiency of service delivery	Workshop on programme priorities
<b>Index facility managers (participated in phase one and two)</b>								
City Health	42	F	7	3	Yes	Yes	Yes	Yes
City Health	43	F	4	2	Yes	Yes	Yes	No
City Health	37	F	5	2	Yes	Left the sub-district		
MDHS	54	F	20	16	Yes	Yes	Yes	Yes
<b>Peer group facility managers (participated in phase two only)</b>								
City Health	43	F	17	6	No	No	Yes	Yes
City Health	40	F	9	5	No	Yes	Yes	Yes
City Health	46	F	8	7	No	Yes	No	Yes
City Health	39	F	7	7	No	Yes	No	Yes
City Health	44	F	12	3	No	Yes	Yes	Yes
City Health	43	F	18	5	No	Yes	Yes	Yes
City Health	46	F	10	5	No	Yes	Yes	Yes
City Health	36	F	1	<1	No	Yes	Yes	Yes
MDHS	43	M	5	5	No	Yes	Left the sub-district	
MDHS	55	M	25	15	No	Yes	Left the sub-district	
MDHS	48	F	8	1	No	Yes	No	No
MDHS	50	F	3	10	No	Yes	Yes	No
MDHS	43	F	7	2	No	Yes	Yes	Yes
MDHS	43	M	<1	9	No	N/A	Yes	Yes
MDHS	58	F	24	9	No	N/A	Yes	Yes
MDHS	42	F	<1	3	No	N/A	Yes	Yes

Legend: M – Male; F – Female; N/A not applicable, as not yet appointed in the sub-district as a facility manager

Sixteen facility managers (eight from City Health, City of Cape Town and eight from Metro District Health Services, Provincial Government of the Western Cape) participated as the sub-district peer group (also shown in Table 4.1). They participated with the index facility managers in a set of workshops in phase two of the research. Three facility managers who were part of this peer group left during the three year period of data collection and, on appointment, their replacements were invited to join the research as members of the peer group.

The index facility managers were all female, between the ages of 37 and 56 years. They had between 4 and 20 years of experience working in primary healthcare services, with between 2 and 16 years of management experience. In the peer group, there were 13 females and three males; in stage two, with new appointees, there were a further two male facility managers. The underrepresentation of males is not surprising, given the predominance of females in the nursing profession in South Africa, which is the professional cadre from which primary healthcare facility managers are generally drawn from this setting. The average age of the peer group was 45, with 10 years of primary healthcare services experience, and 6 years of management experience<sup>17</sup>.



## **4.9 Data collection and analysis**

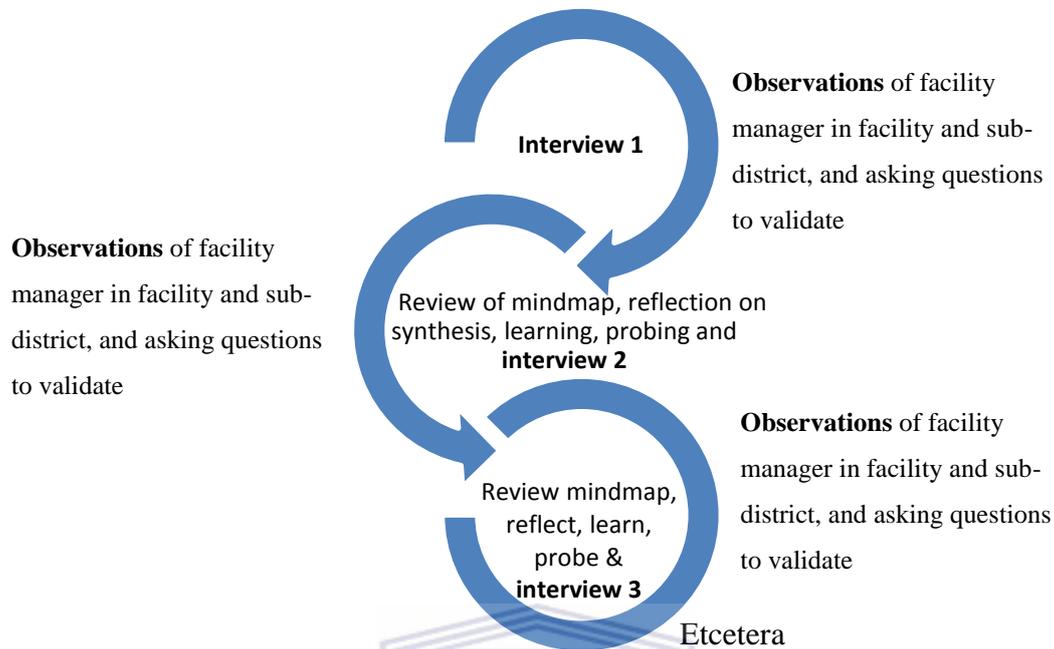
### **4.9.1 Iterative cycles**

Kvale (2007) puts forward two metaphors for the process of collecting and analysing data. The first is that of a miner who sets out to extract data and examines it later. The second metaphor, that of a traveller, describes the approach taken in this research, which sees data collection and analysis as intertwined and the researcher as “ a traveller on a journey to a distant country that leads to a tale to be told upon returning home, involves travelling alongside the interviewee and sees interviewing and analysis as ‘[an] intertwined phases of

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<sup>17</sup> If less than one year experience in PHC services or management, then this was taken to be 0.5 years for the purpose of calculating the average.

knowledge construction' which leads to socially constructed knowledge" (Kvale, 2007, pp19-20).



**Figure 4.3. Intertwined nature of data collection and analysis in phase one**

As shown in Figure 4.3, The intertwined nature of data collection and analysis in phase one, the process of interviews, observations and important first steps in analysis (review of mindmaps synthesised from earlier data, reflection and learning) were closely intertwined. Interestingly, even the processes of interviews and observations were not fully separate in this research as the times set aside for interviews allowed some unanticipated observation, and observation times gave opportunities for questions and some data-rich conversation.

#### **4.9.2 The challenge of eliciting tacit knowledge**

Polanyi (1996) notes that practice-based and experiential knowledge, which he termed “tacit knowledge”, is not easy to articulate. This is relevant to the topic under investigation which is concerned with practice - the use of information (a practice) in decision-making (another practice). This research therefore sought to use a set of techniques which would probe the tacit knowledge that facility managers had from their practice; this complemented the more direct questioning which was suitable for eliciting more conscious or explicit knowledge that facility managers had, deriving from their reasoning processes and practice.

Citing Ambrosini and Bowman (2001), Abernethy and Malina (2005, p137) contend that the dichotomy of presenting knowledge as tacit or explicit is a false one, and that some tacit knowledge can be accessed:

*The tacitness of knowledge is a matter of degree. At one extreme, knowledge is deeply ingrained and totally unavailable. At the other extreme, knowledge can be easily communicated and shared. In the middle lies knowledge that has the potential to be articulated. By asking the right questions, this knowledge can be tapped and made available to the organization. The knowledge remains tacit because nobody has tried to articulate the knowledge, not even the holder of the knowledge.*

In trying to elicit tacit knowledge, which is known but not articulated, traditional data collection methods of qualitative research such as interviewing, can still be appropriate. However there is a level of knowledge which is known but which is difficult to articulate, and here the use of story telling, narratives, metaphors or mapping processes becomes particularly useful (Abernethy & Malina, 2005; Burke et al., 2005; Meijer, Zanting, & Verloop, 2002).

Observations may remain useful in accessing tacit knowledge:

*... persons may not be consciously aware of, or be able to articulate, the subtleties of what goes on in interactions between themselves and others. Observations put researchers right where the action is, in a place where they can see what is going on.* (Corbin & Strauss, 2008, pp28-29)

Observations also allow the researcher to observe the form of tacit knowledge which is expressed in action or doing (Polanyi, 1966).

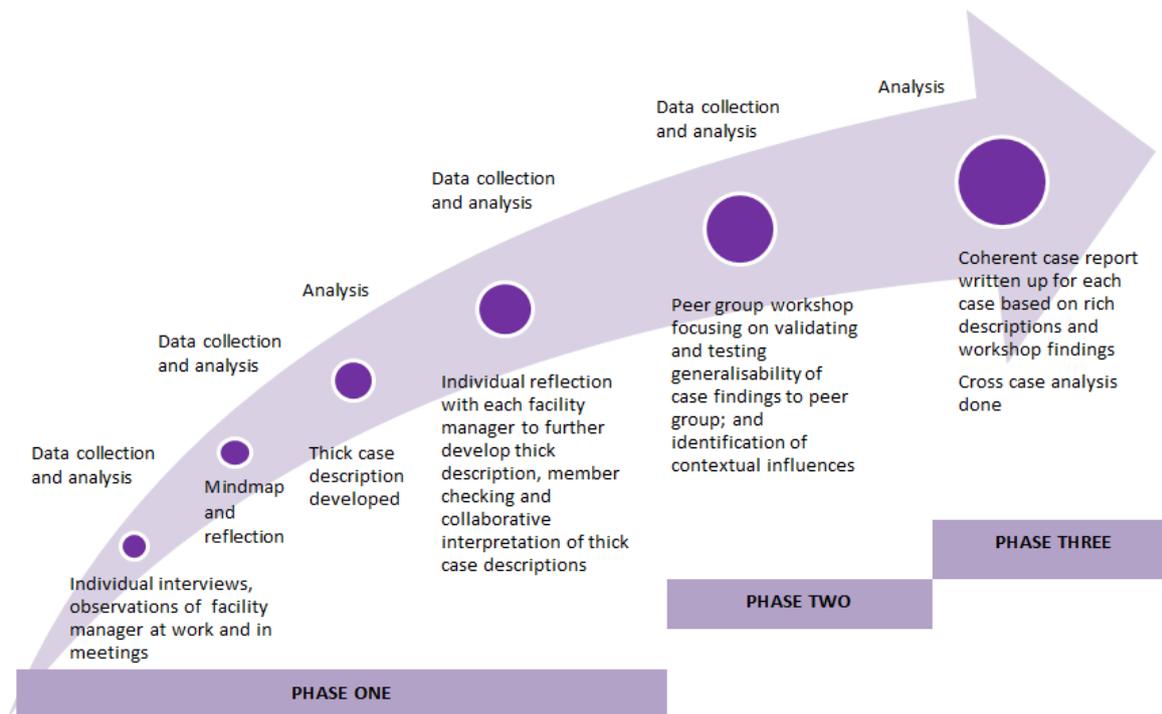
#### **4.9.3 An overview of the interactive process and variety of methods**

Data collection was conducted over a three year period in three phases. It was iterative in nature and interlinked with cycles of analysis, as shown in Figure 4.3. This enabled an emergent process, with early analysis informing subsequent data collection. The use of individual and peer reflective learning was an important part of both data collection and analysis.

In phase one, the researcher collected data on all three cases, through: a document review of policy, guidelines and minutes of meetings; observation of the facility managers at work (both in their facilities and in sub-district management meetings); a set of in-depth interviews with the facility managers, using story telling techniques, mindmaps and critical incident analysis; and a set of key informant interviews focused on understanding the processes, practices and values operating in the sub- district and district context. The researcher collated this data into a total of six thick descriptions of the three areas of management decision-making, three for City Health and three for MDHS. The four index facility managers engaged with these thick descriptions of each case and, through individual reflective learning, added to the data and interpretation.

In phase two the thick descriptions informed a series of three workshops with sub-district peers in City Health (involving an additional six City Health facility managers) and a similar series of three workshops with substructure peers in Metro District Health Services (involving an additional seven MDHS facility managers).

In phase three, the academic researcher analysed the thick descriptions and the workshop reports for each case, to draw out themes related to the nature of decision-making, the use of information and the influence of the health system context. These findings from the workshops validated and extended the thick descriptions, and together these were written up as a single case report for each case. This step also combined the City Health and MDHS narratives into one. In the last analytical step the researcher conducted a cross case analysis of the three case reports.

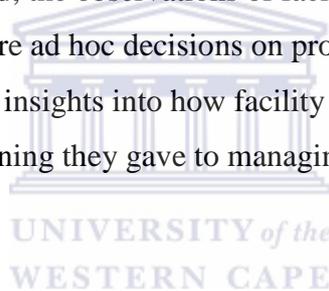


**Figure 4.4. Phased approach to data collection and analysis**

Data collection methods varied over the course of this research, with the document review, key informant interviews, and interviews and observations of facility managers being the predominant method of data collection in phase one, and reflective workshops in phase two. Further, in phase one, diverse methods were found to be better suited to the three different cases, because of the different timeframes and dynamics involved. In deciding what methods to use when, and in keeping with the flexibility of design offered by qualitative research, instinct was privileged as was the intention to explore and learn, rather than working with predetermined methods. These decisions were discussed within the DIALHS project, which served as the main platform for peer review. This approach to methods is supported by Denzin and Lincoln (2005a) who argue that qualitative research is inherently multi-method. They use the image of a *bricoleur*, (discussed in section 4.3.2) to describe an approach to methods which emphasises the need for the researcher to employ whatever methods are required to get at the evidence needed to answer a research question. For example, the management of absenteeism was explored mainly through story telling, focused on critical incidents and some observation. This was suitable, as a severe staff shortage existed, representing a crisis in managing small facilities, and thus presented a critical incident which was rich for review. The management of client flow and allocation of work was found to

involve a series of decisions during the course of the day and so was best explored through whole day observation of the facility manager at work, together with in-the-moment questioning, to understand what information was being used as the decisions were being taken. The management of programmes occurred in two different time scales during the period observed, with a monthly data review, as well as daily decisions taken to manage client intake and work allocation, and support programme champions<sup>18</sup>. This case was best understood through the use of story telling techniques in individual interviews, observations of interactions with staff in the facility on facility rounds, and in meetings within the facility and in the sub-district office.

The use of a variety of data collection methods also allowed for different types of data to be gathered about the same decision area, from different points of view. For example, in phase one, the observation of sub-district and facility meetings allowed formal decisions related to programme priorities to be tracked; the observations of facility managers in their facilities provided the opportunity to explore ad hoc decisions on programme priorities too, while interviews allowed the researcher insights into how facility managers made sense of the decisions they faced, and the meaning they gave to managing different aspects of programmes.



This research benefited from being nested in a larger researcher project, the DIALHS project. Data from the ongoing DIALHS reflective processes, some recorded in transcripts and notes, was included in this research and used as triangulation to validate the findings and also the interpretations generated. Furthermore, the researcher interacted with sub-district and facility managers regularly in the course of other DIALHS activities (beyond the scope of this research), and observations were recorded in the researcher's field journal if they seemed relevant to this research. These interactions also served to build relationships which fostered openness and trust.

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<sup>18</sup> A project champion in this context is a staff member selected by the facility manager, who has been given specific responsibilities in implementing a facility- or community-based project, and who motivates peers to participate in the project.

#### 4.9.4 Document review

A document review was conducted at the start, and was added to during the course of the research. This was based on the approach set out by Ritchie which “involves the study of existing documents, either to understand their substantive content or to illuminate deeper meanings which may be revealed by their style and coverage” (Ritchie, 2003, p35). An initial list of documents for review was developed from the conceptual framework, and added to from key informant interviews, in discussion with the DIALHS team and, during the review, by following references made to other documents. The documents were reviewed by the researcher who sought to describe the scope of content and the framing of core concepts, such as planning, quality improvement, monitoring and evaluation, and accountability between levels of the health system. The alignment of concepts across national, provincial and district documents was further examined, as well as the way they impacted on the district and sub-district discourse. The guide for anticipated data is shown in Appendix 1.

As the document review progressed, one set of documents - facility managers' job appraisals - was omitted, as it became clear that richer data on the scope of expected and actual decision-making processes could be gathered in interviews and observations. Further, the researcher was concerned that a review of facility managers' job appraisals might not be ethical, and might impact negatively on trust, and the power dynamic within the relationship with facility managers, who participated as co-researchers. Additional documents were added to the document review after the selection of cases and during the ensuing field work. These were mainly national, provincial and local authority policy documents related to the cases chosen. The full list of documents reviewed is shown in Table 4.2.

Legislation and policy frameworks for planning, aligning objectives between actor groups, budgeting, monitoring and reporting on performance, were used to explore the national health system context and normative models of decision-making processes, as well as how health information should be used. Special attention was paid to the specification of authority, roles and responsibilities in decision-making across the three tiers of government and within the district health system. Policy frameworks relevant to health information systems, human resource management and quality improvement were included. Minutes of management meetings at district and sub-district level were used to explore the local health system

context. Minutes of meetings that facility managers attended at sub-district and facility level were used to explore the scope of actual decision-making and how information was used in these processes. Interpretation of the minutes took into consideration the fact that they were written for a purpose other than research, and that there was potentially recall bias and inaccuracies (Yin, 1994).

**Table 4.2. Documents included in the document review**

<ul style="list-style-type: none"> <li>• Documents</li> </ul>	<ul style="list-style-type: none"> <li>• Data</li> </ul>
<ul style="list-style-type: none"> <li>• <i>National Health Act 2005</i> (National Government of South Africa, 2005)</li> <li>• <i>The Public Finance Management Act (PMFA) of 1999</i> (National Government of South Africa, 1999)               <ul style="list-style-type: none"> <li>• <i>Public Audit Act of 2004</i> (National Government of South Africa, 2004)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Authority and legal responsibilities for health planning and financial control</li> </ul>
<ul style="list-style-type: none"> <li>• <i>White Paper on Transforming Public Service delivery</i> (Department of Public Service and Administration, 1997)</li> </ul>	<ul style="list-style-type: none"> <li>• Vision and values for public sector</li> </ul>
<ul style="list-style-type: none"> <li>• Framework for Strategic Plans and Annual Performance Plans (National Treasury, 2010a)</li> <li>• Framework for the Development and Quarterly Monitoring of the Annual Performance Plans (APPs) and the Operational Plans of the National Department of Health (Department of Health, 2012a)</li> <li>• <i>Policy Framework for the Government-Wide Monitoring and Evaluation System (GWMES)</i> (Department of Performance Monitoring and Evaluation in the Presidency, 2007)</li> <li>• <i>Framework for Managing Programme Performance Information</i> (National Treasury, 2007)</li> <li>• <i>South African Statistics Quality Assessment Framework</i> (Statistics South Africa, 2010)</li> <li>• <i>National Evaluation Policy</i> (Department of Performance Monitoring and Evaluation in the Presidency, 2011)               <ul style="list-style-type: none"> <li>• <i>Guide to the Outcomes Approach, Presidency</i> (Department of Performance Monitoring and Evaluation in the Presidency, 2010)</li> <li>• <i>The Framework for Strategic Plans and Annual Performance Plans</i> (National Treasury, 2010b)</li> <li>• <i>Department of Health Strategic Plan for 2010/2011 - 2012/13</i> (Department of Health, 2010a)</li> <li>• <i>National Strategic Plan on HIV, STIs and TB 2012 – 2016</i> (Department of Health, 2012c)</li> <li>• Medium Term Expenditure Framework Guidelines: Preparation of Expenditure Estimates for the 2013 Medium Term Expenditure Framework (National Treasury, 2013)</li> <li>• <i>Public Service Middle Management Competency Framework</i> (Department of Public Service and Administration, 2005)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Authority, roles and responsibilities in decision-making across the three tiers of government.</li> <li>• The expected and actual role and nature of health information in decision-making across the three tiers of government.</li> <li>• How to plan, budget, monitor and account for services delivery and performance, and align these processes between different actor groups.</li> <li>• Key issues raised at the national and provincial level that are relevant to decision-making, and to the health subsystems that influence the use of health information in decision-making.</li> <li>• The structure, authority, roles and responsibility of the district health system.</li> </ul>

<ul style="list-style-type: none"> <li>• <i>Human Resources for Health South Africa: HRH Strategy for the Health Sector: 2012/13 - 2016/17</i> (Department of Health, 2012b)</li> </ul>	<ul style="list-style-type: none"> <li>• National policy for human resources for health.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>District Health Information Management Information System (DHMIS) Policy</i> (Department of Health, 2011a)</li> </ul>	<ul style="list-style-type: none"> <li>• National policy for district health information system, contextualised within the national health information system.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Policy on Quality in Health Care for South Africa</i> (Department of Health, 2007)</li> <li>• <i>National Core Standards for Health Establishments</i> (Department of Health, 2011b)</li> </ul>	<ul style="list-style-type: none"> <li>• National policy on quality in healthcare.</li> </ul>
<ul style="list-style-type: none"> <li>• National Department of Health Strategic Plan for 2010/2011 - 2012/13 (Department of Health, 2010a)</li> <li>• <i>National Service Delivery Agreement 2010-2014: A Long and Healthy Life for All</i> (Department of Health, 2010b)</li> </ul>	<ul style="list-style-type: none"> <li>• National health priorities and performance.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Comprehensive service plan for the implementation of healthcare 2010</i> (Western Cape Department of Health, 2007)</li> <li>• <i>2020 The future of health care in the Western Cape</i> (Western Cape Department of Health, 2011)</li> <li>• <i>Healthcare 2030 The Road to Wellness</i> (draft) (Western Cape Department of Health, 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Provincial health vision, priorities and values.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Western Cape Department of Health Strategic Plan 2010-2014</i> (Western Cape Department of Health, 2010)</li> <li>• <i>Western Cape Department of Health Annual Performance Plan</i> (Western Cape Department of Health, 2012)</li> <li>• <i>City of Cape Town Integrated Annual Report 2012/13</i> (City of Cape Town, 2013)</li> <li>• <i>Directorate Executive Summary of the Service Delivery and Budget Implementation Plan 2011/2012</i> (City Health, 2012)</li> </ul>	<ul style="list-style-type: none"> <li>• Provincial health priorities and performance.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Minutes of the City Health Management Team (HMT)</i></li> <li>• <i>Minutes of the Metro District Health Management Team</i></li> <li>• <i>Minutes of sub-district management meetings attended by facility managers</i></li> </ul>	<ul style="list-style-type: none"> <li>• Local health system context.</li> <li>• Scope of actual decision-making.</li> <li>• Examples of how information use in decision-making is recorded.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Facility managers job descriptions</i> (see Appendices 2 and 3)</li> </ul>	<ul style="list-style-type: none"> <li>• Scope of expected decision-making processes.</li> </ul>
<ul style="list-style-type: none"> <li>• <i>HIV/TB/STI programme actions plans developed by facility managers</i></li> <li>• <i>Waiting time survey action plans developed by facility managers</i></li> <li>• <i>Minutes of facility meetings</i> (with staff and with heads of department)</li> </ul>	<ul style="list-style-type: none"> <li>• Decisions to probe further in-depth interviews with facility managers.</li> </ul>

#### 4.9.5 Key informant interviews

A set of 31 key informant interviews were held, as shown in Table 4.3. Of these, 24 were with district and sub-district managers and support staff working in health information, finance, human resources and programmes. The purpose of these interviews was to understand the health system context in which the facility managers operated, and to explore the expectations and perceptions of facility managers' decisions and their information use in decision-making amongst colleagues working in district, sub-district and facility settings. These interviews were structured according to the data needed. Focused questioning was used to understand how systems, processes and procedures were intended to work, while semi-structured techniques with open-ended questions and probing were used to explore perceptions and experiences related to this (Britten, 2006).

**Table 4.3. List of key informant interviewees**

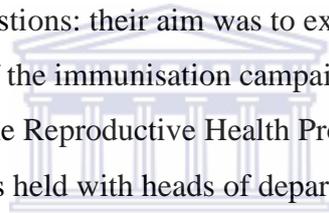
Level	Key informants
<b>District</b>	Deputy Director: Professional Support Services Assistant Deputy Director: Health Information
<b>Sub-district</b>	Sub-district health manager (City Health) Sub-district health manager (MDHS) Personal PHC and Programme Manager (City Health) Deputy Director: PHC (MDHS) Programme Coordinator (City Health) Administrative Officer (City Health) Health Information Officer (City Health) Health Information Officers x 2 (MDHS) Deputy Director: Finance and Supply Chain (MDHS) Deputy Director: Human Resources (MDHS) Deputy Director: Comprehensive Health Services (MDHS) Deputy Director: Pharmacy Services (MDHS) HAST Manager (MDHS)
<b>Facility</b>	Reception staff x 3 (City Health) Reception staff (MDHS) Heads of departments x 4 (MDHS) Administrative clerks x 2 (MDHS) Health Information Clerk (MDHS) Dedicated Data Capturer (MDHS) Immunisation Campaign champion x 2 (MDHS) Reproductive Health champion (City Health)

An example of an interview guide which illustrates the types of questions asked is presented in Box 4.1; Questions 1 – 3 are more open-ended, while questions 4 - 6 are more focused.

#### **Box 4.1. Key informant interview guide for sub-district managers**

1. What are the particular problems that you experience dealing with absenteeism?
2. Why do you think that these problems have arisen?
3. Some managers seem to have risen to the challenge of managing absenteeism and other not.
4. Would you agree with this?
5. In your opinion, why have some been able to rise to the challenge and others not?
6. What measures do you think are important in supporting managers in managing absenteeism?
7. What training, support and mentoring have facility managers had?
8. What is the role of the sub-district HR clerk?
9. How is the HR department organised in the district and province?

A further three key informant interviews were conducted with three project champions, using both focused and open-ended questions: their aim was to explore the information use and learning that takes place in one of the immunisation campaigns (City Health and MDHS) that ran during the study period and the Reproductive Health Project (City Health). In addition, a set of four focused interviews was held with heads of department in one of the larger facilities.

  
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#### **4.9.6 Direct observation**

The advantage of observation is that it is a direct means of gathering information. It is a tool for understanding more than what people say or can articulate, and does not rely on the participant's memory. While interviews and focus groups allow participants to report their actions, i.e., to say what they do, observations provide an opportunity to see what they do and to assess whether what they say is in fact what they do (Pope & Mays, 2006; Corbin & Strauss, 2008). Qualitative observation aims to be naturalistic, observing people in real life situations (Blumer, 1969 in Pope & Mays, 2006). The disadvantage is that observations are time-consuming (Corbin & Strauss, 2008) and the presence of the researcher may alter the behaviour of those observed (the Hawthorne effect), though this effect is likely to diminish over time (Bowling, 1997); it may also be less significant if the observer takes on a role as a participant observer (Pope & Mays, 2006).

This research suggests that the way in which observations are conducted and the relationship between the observer and the observed is also crucially important. In this research the researcher had been trained as a medical doctor, and had worked in primary healthcare but had little personal experience of management. At the time of this research, facility managers in this setting were largely nurses by training, and had to negotiate a strong professional hierarchy in the organisations in which they worked, where many doctors still saw themselves as professionally *superior* to nurses. The researcher was aware of this dynamic, and actively sought to avoid being seen as a supervisory figure, by casting herself as a novice in a learning process who valued the greater experience and expertise of the facility managers. Furthermore, the focus within this research on co-production of knowledge enabled a peer relationship, with the index facility managers participating as co-researchers.

While some suggest that a “typical day” should be chosen to observe behaviour, Mintzberg (2009) contests the applicability of this when studying management practice, saying that there is no such thing as a typical day in the life of manager. In this research the choice of days was given to the manager, as the intention was to limit the disruption to practice as far as possible, and it was felt that the manager was best placed to make the decision of when would be a suitable and acceptable day and time. This was also important in establishing a respectful relationship between the researcher and the index facility managers, as co-researchers in this research. Each facility manager was asked to nominate at least one full day to start the process. Some observations happened when facility managers were delayed or could not keep agreed interview times, but were prepared to be observed instead. In this, the researcher had to be flexible. Sometimes observations happened in the course of an interview when the facility manager was called on to attend to a staff member or client.

During observation times, the researcher shadowed the facility managers as they did their work. This involved accompanying facility managers on rounds of their facility, sitting in a corner of their office while they attended to administrative tasks, took telephone calls and engaged with staff and clients who came to the door; it also entailed attending the meetings that facility managers had within the facility and in the sub-district. This allowed the researcher to observe interactions with a range of actors in both formal and informal engagements including facility clients, community members and representatives, staff, peers,

supervisors and sub-district managers. While sitting in the office or in meetings, the researcher tried to remain as unobtrusive as possible, to be true to the observer role. On the facility rounds this was less possible, and the researcher found that the rounds presented the opportunity for both observation and in-the-moment questioning about practice. Facility managers were generally keen to explain the challenges that they faced, and were less conscious of time constraints when they were moving around their facility. This became an important supplement to the formal interviews.

In total there were 16 observation periods of shadowing the four index managers in the first phase of the research; this resulted in 64 hours and 7 minutes of dedicated observation time. A further 16 hours and 30 minutes of observation time was spent observing facility managers in facility-based meetings, including two staff meetings, four meetings with heads of department, two meetings with champions, a clinical management meeting, two meetings about managing the TB programme and two meetings with staff from non-government organisations partnering the facility. A facility manager was also accompanied on an outreach awareness day in the community and on a visit to a school, to meet with a school principal. Further, the researcher attended nine sub-district meetings in the first phase of the research to see facility managers at work with their peers and with the sub-district management, which entailed another 58 hours and 29 minutes of observation time.

In doing observations, Corbin and Strauss suggest that the researcher should start by “sitting back” and “letting a scene unfold” until something interesting “captures catches the eye” (Corbin & Strauss, 2008, p30). This researcher took a more proactive approach to note-taking, initially seeking to capture in quick jotted notes as much of the activities and interaction observed as possible, including phrases of dialogue, without making judgements of what would be useful or relevant at the time. These field notes were sketchy in contrast to the notes taken in meetings, where the researcher, who was skilled in minute-taking, generally had access to a table and could take more comprehensive notes. Immediately after the observation time (before returning home or to the office), the researcher sat in the privacy of a car and re-read the jotted field notes, deciphering the handwriting, and adding key words to reference further detail and impressions; she then used a Dictaphone to capture observations and other thoughts that arose in full. This included a deliberate reflection on what was most striking about the observations, how the facility manager had appeared

(identifying emotional and body language cues in relation to others, the work at hand that day, the engagement with the researcher), and the researcher's own feelings about the experience and her own relationship with the facility manager. The Dictaphone recording was later transcribed using Dragon NaturallySpeaking<sup>19</sup> which generated a word document which was then checked for accuracy. This process prompted further recall and reflection, which the researcher added at this stage. The researcher tried to complete this last step the next day, although sometimes this could only be done later. Generally it was possible to complete this process within a week of the actual observation time.

Initially, a set of observation notes was given to the two thesis supervisors who commented on scope and appropriateness. Their feedback encouraged the researcher to record more observations of body language and interactions, to track her own responses to what she was seeing and hearing, and when observing formal meetings, to be systematic across the whole meeting, to note the dynamics between actors and to separate observations from the content of the meeting.

It was important for the note taking to be as comprehensive as possible in the early stages of phase one, because it often happened that the researcher only saw the significance of the data gathered after the observation. In part this was because the researcher had little personal experience of management and needed to *learn to see* the practice she was observing. A simple planning model (identify problem, assess causes, strategise, implement, monitor and evaluate) was useful in framing the meaning of various activities and engagements observed. The researcher also learnt to be aware of different types of information.

A particular personal challenge was to see beyond the formal information from the health information system, with which the researcher was most familiar; this had been an important focus of her research to that point, in order to see other forms of information being used. As the researcher worked with the observation data she was surprised to find that information was not only being used but also *generated*, as the facility managers engaged with clients and staff in different settings, and that different types of *knowledge* were used alongside information in decision-making. It was necessary to develop a typology of knowledge to be able to describe what was being observed. As the researcher became more tuned into the

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<sup>19</sup> Dragon NaturallySpeaking version 11.0 for Professionals (2010) is a speech recognition software package

management processes and different types of information and knowledge, she was able to experience the significance of certain behaviour *in-the-moment*, which meant that it was possible to give them particular attention and describe them in more detail. As the cases became more clearly defined, critical incidents could also be observed in greater detail. This was important as it is not possible to capture everything when doing observations (Pope & Mays, 2006).

#### **4.9.7 Interviews with index facility managers**

In phase one, a set of interviews were conducted with the four index facility managers in parallel with the observations. These were semi-structured life-world interviews (Kvale, 2007). Kvale has outlined a number of aspects of this interview form, paraphrased below, which fit well with the reflective approach to knowledge co-production adopted in this research:

1. The topic is the interviewee's lived everyday world and, as applied in this research, the interviews were about the facility managers' routine experience of managing their primary healthcare facility and staff.
2. The interviewer seeks to establish not only facts, but the meaning in what is being expressed. In this research, the meaning was co-constructed with the interviewer, checking the implicit meaning during the interview and in follow-on interviews, and seeking to establish a joint interpretation of the interview data with the facility manager.
3. The interview is qualitative and descriptive: "*The focus is on nuanced descriptions that depict the qualitative diversity, the many differences and varieties of the phenomenon*" (Kvale, 2007, 12); the descriptions are of specific situations and actions, not general opinions.
4. The interviewer exhibits "qualified naivete": this implies that she "remains open to new and unexpected phenomena ... attempts to obtain descriptions that are as comprehensive and pre-suppositionless as possible of important themes of the interviewees' life world" (Kvale, 2007, 12); at same time, the interviewer must be knowledgeable enough to be sensitive to the meaning, to be able to read the material that is expressed. In this research qualified naivete was facilitated by the researcher's assuming the role of a novice in a learning process (since her personal management

experience was limited); she was, however, familiar with the work context, having worked in similar primary healthcare facilities in a clinical role for four years (1997-2000).

5. While the interview is focused on particular themes, it is only loosely structured. (A full description of the semi-structured interviews follows below.)
6. The interview is open to ambiguity and contradiction in life experience. In this research ambiguity and contradiction was understood to be consistent with the experience of working in an inherently complex health system context, with many different actor engagements over time, on a range of overlapping issues, with different and sometimes contradictory objectives across different time scales.
7. The interview is open to change in descriptions and meanings within the interview process, as the interviewee gains new knowledge in the process of thinking about and describing a phenomenon or experience. This was understood to be part of the reflective learning approach.
8. The interview is a positive experience as it is enriching and the interviewee obtains new insights. In this research, the interviewer's questioning and listening was understood to facilitate a process of reflection which enabled new framings and understandings for the interviewee and interviewer alike.
9. The interview is an interpersonal situation where knowledge is "constructed in the inter-action between two people. The interviewer and the subject act in relation to each other and reciprocally influence each other". This was in keeping with the notion of co-production of knowledge held by this research.

In phase one of data collection, four or five formal interviews were conducted with each index facility manager (21 interviews in total) lasting between 45 minutes and two hours five minutes<sup>20</sup> (average time one hour eleven minutes). Facility managers were interviewed in their own offices to ensure that they were in a naturalistic setting, surrounded by prompts and reminders of their daily work. The disadvantage of this strategy was that the interviews often started later than scheduled, and were interrupted or ended early because of intervening telephone calls received, or staff and clients knocking on the door to bring issues for the facility managers' attention. These interruptions were not discouraged, as the researcher was sensitive to not obstructing management priorities. Further, they allowed for observations of

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<sup>20</sup> This is actual interview time and excludes interruptions

the facility managers at work, and gave insight into the fragmented, interrupted nature of the managers' work.

Generally the interview time was structured to address multiple purposes which included:

- collecting and validating new interview data,
- validating and adding to previously-collected observational and interview data,
- making sense of and developing a shared understanding of an emerging narrative, describing the nature and processes of decision-making and information use,
- reflecting on what we (the researcher and co-researcher dyad) were learning.

A variety of data collection techniques were used to encourage facility managers to explore and understand their practice. Generally only one or two techniques were used within the same interview. An interview plan was developed for each interview, sketching out areas for semi-structured interviewing, as well as questions for clarification or probing into previously collected data, a synthesis question for reflection and sense-making, and often a mindmap for review; however, the researcher remained flexible in how much was covered and which technique was used when, depending on how much time was available, and what the facility manager wanted to focus on in that session. Each interview was therefore guided by planning but was allowed to follow an emergent course. The formal interviews were recorded, so that the researcher was freed to listen actively, take notes, check understandings about the data and participate in making sense of it. A set of observational notes were also written about each formal interview after the event.

The interview techniques included open-ended questions used in a semi-structure interview format, reflective learning, mindmapping, and story telling around a positive experience of management or a critical incident. An interview can be considered semi-structured when the purpose and structure is pre-determined (Britten, 2006). This sort of interview uses three or four open-ended questions to create a scaffold for respondents to respond with detailed descriptions, and for stories to unfold without too much interference from the researcher, beyond setting the general direction and subject content to be covered, and providing prompts to encourage richer descriptions and some reflection. This technique was found to be very useful in this research in exploring what sorts of decisions each area of management, i.e., each case, required, and how these decisions were made. The following questions, which

were loosely followed in exploring the case of managing unplanned leave, illustrate the framing used in this technique:

1. What does managing unplanned leave in your facility require of you?
2. What are your biggest challenges in managing unplanned leave?
3. What are your goals and how do you try to reach them in your facility?
4. Who do you work with and how/when does this interaction happen?

Generally the researcher did not ask directly what information was used to support decisions and how. This was to avoid prompting respondents to give normative answers based on what they thought should be used. Instead, when instances of decisions were identified in the respondents' answers, probes such as "how do you know that?" and "what led you to that decision?" were used.

#### **4.9.8 Use of mapping processes in co-constructing knowledge**

Various types of mapping processes have been used to surface tacit and practice-based knowledge from individuals (Meijer et al., 2002) as well as groups (Trochim, 1989), and have been found useful in public health research (Burke et al., 2005; Trochim, 1989). Mapping techniques include cognitive, causal and concept mapping. At times the terms are used interchangeably though there are important differences. Cognitive mapping has been described as:

*a representation of an individual's personal knowledge and own work experience (Bougon et al., 1977). During the mapping process, individuals must explain what they do, revealing facets of their behavior that were previously tacit. The in-depth probing allows the knowledge that goes unspoken in the organization to be 'mapped'. Cognitive maps visualize knowledge and communicate the visualization to individuals, groups or organizations, thus converting tacit knowledge to explicit knowledge (Eden, 1992). (Abernethy & Malina, 2005, p138)*

Causal mapping is a subgroup which specifically seeks to understand how factors are related to an outcome of interest (Abernethy & Malina, 2005). Concept mapping is also concerned with relationships between concepts, though these are not necessary causal relationships. Trochim (1989, p2) describes it as follows:

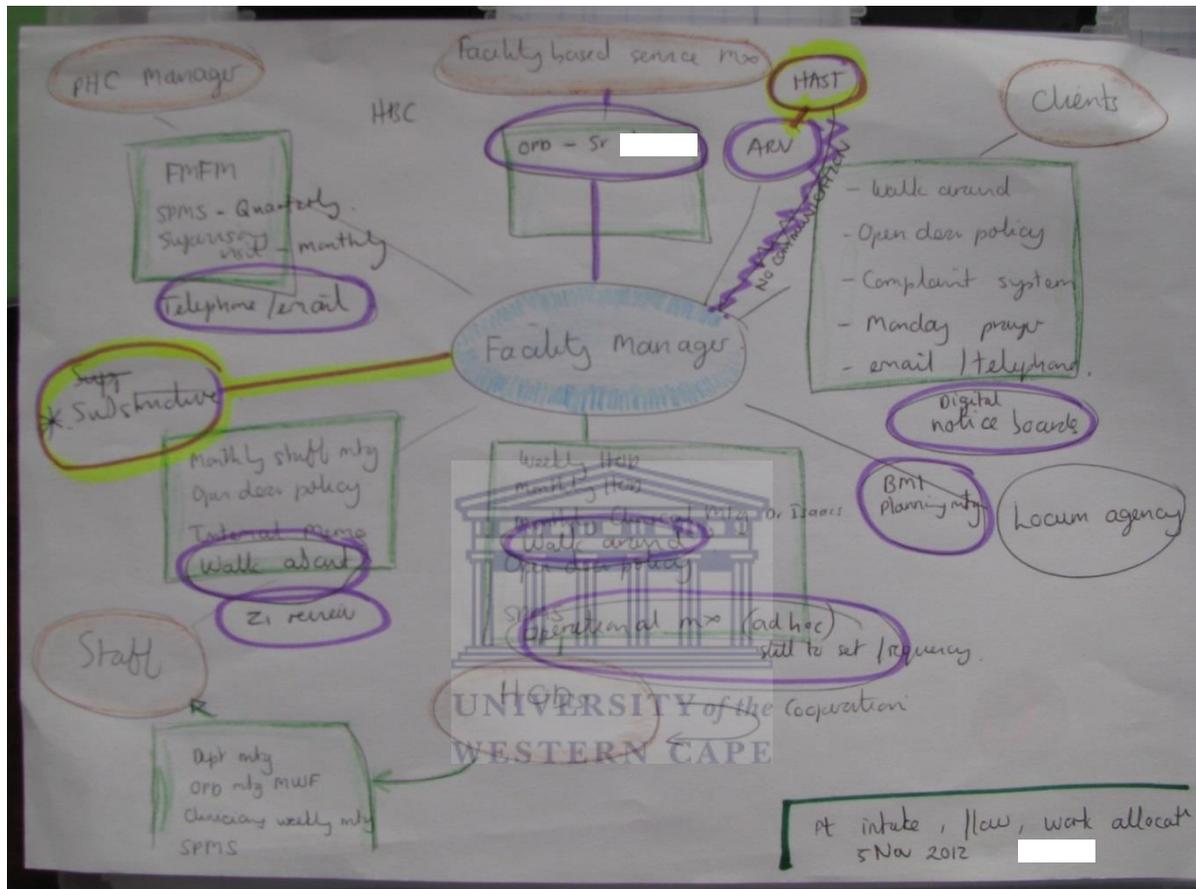
*A concept map is a pictorial representation of the group's thinking which displays all of the ideas of the group relative to the topic at hand, shows how these ideas are related to each other and, optionally, shows which ideas are more relevant, important, or appropriate.*

Mindmapping is a particular visualisation technique which is useful when there is one main idea or topic that is placed centrally in the map, and then developed along themes or subtopics that are arranged in radial lines (Eppler, 2006). It is read from the centre outwards and often involves the use of colour. In this research the mindmap technique was found to be practical in depicting how the facility manager (placed at the centre of the figure) gathered information from, and generated information with, other actors (arranged on the periphery) through a set of processes shown in boxes. The researcher constructed mindmaps from the initial interview and observation data for each index facility of each case, and presented them back to the index facility managers. These maps represented a first step in analysis, and showed the researcher's understanding of the actors and processes that generated or used information in decision-making in each case. The researcher then met individually with each index facility manager to review the mindmap for each case. The reflection on the mindmap was guided loosely by the following questions:

- Have I (the researcher) understood your story so far?
- What needs to be changed, added or removed from this map to better describe your experience?
- What does this map reveal to you about your management experience, how you relate to others and the role of information in this?

This process enabled a co-construction of a story about what and how information was being used. An example of one of the mindmaps constructed from interview and observational data is shown in Figure 4.5 below. With the facility manager in the centre, and other key actors in the oval shapes at the periphery of the diagram, the green boxes represent the variety of processes through which the facility manager engages with the key actors and where information is exchanged, generated or used. The points outlined in purple are ones that have been added during the course of the reflective conversation with the facility manager, during which she was able to amend and extend the visual representation of her decision-making, and information use processes and activities. In the right upper quadrant of the diagram, a

line has been crossed out in a jagged purple zig zag – this represents a correction: at the time of this research, there was no direct communication between the facility manager and the human immunovirus [HIV]/ tuberculosis [TB]/ sexually transmitted infections [STI] (HAST) coordinator.



**Figure 4.5. Example of a mindmap co-constructed with a facility manager: efficiency of service delivery**

#### 4.9.9 Use of storytelling in knowledge co-production

The terms *narrative* and *story* are often used interchangeably (Feldman et al., 2004). This research has not adopted narrative enquiry as a method, but has used stories as a data collection strategy. Snowden (1999) proposes story telling as a valid tool for *digging beyond* participants’ explicit knowledge, and creating opportunities for tacit knowledge to surface:

*If you ask people what they know, they will generally tell you what they think they ought to know, and it will generally be explicit knowledge – the knowledge that can be written down. The more valuable tacit knowledge, and a substantial proportion of*

*explicit knowledge is only known when it is needed to be known. It is triggered by a combination of events and circumstances which creates that 'I know what is going on' moment for the knowledge holder. (Snowden 1999, p33)*

Story telling is a recognised qualitative strategy of data collection in social science research (Connelly & Clandinin, 1990) and has been found to be rich with valuable information (Feldman et al., 2004). It is an appropriate strategy, as humans naturally communicate through stories and use stories to make sense of their world, in a way that also helps understand the context in which they live:

*... humans are storytelling organisms who, individually and socially, lead storied lives. Thus, the study of narrative is the study of the ways humans experience the world. (Connelly & Clandinin, 1990, p2)*

*Narratives are useful data because individuals often make sense of the world and their place in it through narrative form. Through telling their stories, people distil and reflect a particular understanding of social and political relations. (Feldman et al., 2004, p148)*

The use of stories is specifically appropriate to the management context because, as Boje (2003) observes, managers routinely use story telling in doing their work: “*Managers tell and hear stories everyday and they play an important role in the process of managing and organising*” (Boje, 2003, p42). There is a well-established tradition of using stories to study organisations and administration (Hummel, 1991). Stories are also a way of transmitting complex information (Schueber, 2003; Snowden, 1999), which is important in this research, given the complex nature of managerial work. Further, “*stories are contextually embedded*” (Boje, 1991, p109) which is advantageous in case study research, where the context is understood to be part of the case (Stake, 1995). It is particularly relevant in this research as the influence of the health system context is a specific focus of enquiry.

In this research, story telling fits with the overarching approach of reflective practice as, in the telling, the storyteller has the opportunity to recall, re-examine and make sense of an event or process:

*Storytellers use the story format to convey meaning to the listener in concrete terms, sometimes discovering and working out meaning themselves as the story is constructed.* (Feldman et al., 2004, p153)

*The central task is evident when it is grasped that people are both living their stories in an ongoing experiential text and telling their stories in words as they reflect upon life and explain themselves to others.* (Connelly & Clandinin, 1990, p4)

Following Boje (1991), this research adopts a simple definition for a story as “an exchange between two or more persons during which a past or anticipated experience was being referenced, recounted, interpreted or challenged” (Boje, 1991, p8). Boje argues that this definition allows a more naturalistic approach in gathering data from everyday conversation:

*The new definition allowed me to look at more ubiquitous and subtle forms of story* (Boje, 1991, p111). *I observed that ‘people shared very small chunks and pieces of experience quite frequently, but rarely verbalised a whole story in their everyday, turn-by-turn talk’.* (Boje, 1991, p8)

Boje’s approach to defining what is considered *a story* suited this research as, in addition to the stories collected in formal interview processes, when time was set aside for deliberate questioning, stories were gathered opportunistically in spontaneous comments and conversations that arose while the researcher accompanied facility managers during their work.

An example of an explicit attempt to gathering stories comes from the interviews which sought to understand how facility managers used information in managing programme priorities. The following question was used: *Can you tell me a story of when you think you did well in managing a programme, something that, on reflection you say to yourself ‘I feel proud of that’?* The question was specifically framed to invite a positive story, drawing on the understanding, in the methodological field of appreciative inquiry, that the choice of an ‘affirmative topic’ is a generative way to unlock new learning (Cooperrider & Whitney, 2001).

#### **4.9.10 Use of critical incidents in knowledge co-production**

Another version of story telling used in this research draws on the use of a *critical incident* as a focal point for a story. The critical incident technique was first described by Flanagan (1954), based on work that had been conducted in the previous decade in the field of aviation psychology. A critical incident, as defined by Flanagan (1954) is an “extreme behavior, either outstandingly effective or ineffective with respect to attaining the general aims of the activity” (Flanagan, 1954, p338). In this research the critical incident was understood to be the decision-making and information use behaviour of the facility managers, in extreme or unusual management situations. This technique was found to be very effective in exploring the sequencing of decisions and use of information when facility managers were faced with severe absenteeism. The critical incident served to *anchor* the story telling in actual events, that have been experienced (Holloway & Jefferson, 2000).

In this research “retrospective self-report” (Butterfield et al., 2011) was used to collect data. Facility managers were asked to think back to a recent experience of being severely short-staffed and to describe how the situation developed and how they responded. The researcher allowed a first telling of the experience in the facility managers’ own framing and sequencing, and then facilitated an exploration of this story using probing questions such as “when”, “where”, “who else”, “why” and “what”, to encourage the details of the story to emerge, and to ensure that the researcher did not make assumptions of the story as it was being told. While the use of critical incidents was limited to gathering data and did not draw on the formal prescripts for analysis (as described by Flanagan 1954, for example), it was found to be useful in eliciting the tacit and explicit knowledge of facility managers, and served as a stimulus for individual reflective learning as it gave facility managers access to their own rich experiences and the opportunity to consider what meaning these experiences had for their practice.

#### **4.9.11 Data and meta-reflection collected in other DIALHS processes**

From 2010, the DIALHS research team met monthly to do operational planning and to give one another feedback and reflect on what was emerging in the different project activities. These minutes became part of the data generated by the project, supplementing the more

traditional primary data generated by project activities, such as interviews and observations. Furthermore there were days of systematic meta-reflection (reflection on the reflections generated within each activity), at times including the sub-district managers, which happened regularly in the DIALHS project's life cycle, such as when preparing collectively for conferences (the Public Health Association of South Africa conference 2012 and 2013, and Health Systems Global 2014), at the end of each year and when conceptualising and contracting to undertake new activities with health service partners. These meta-reflections were specifically focused on what was being learnt across the project activities, to identify emerging themes, seek the bigger picture and, importantly, answer the question: what does this mean for health system strengthening? The diversity of the team of health service partners (who had different professional backgrounds and different roles at different levels of the health system) and academics (who included nurses and doctors with clinical experience in the field and social scientists) gave a multidimensional richness to the reflections (Lehmann & Gilson, 2014) but also required a commitment on the part of the whole team to respect and learn from different perspectives, with deliberate attention to process and relationships:

*Developing a collective understanding and making meaning of this research endeavour, which did not come with a fixed protocol and predetermined tools and methods but rather with a broad framing and a commitment to joint ownership and co- production, thus became a critical part of the project—not only for the research team, but also for the collective of the research and services team. Both the character of the partnership, its power dynamics, as well as the terms of engagement are therefore under continuous discussion, both 'mutually constituting and uplifting but also at times disturbing and debilitating' (Orr and Bennett 2012a, p. 428), multidimensional and multidirectional. (Lehmann & Gilson, 2014, p5)*

These meta-reflections were recorded and transcribed, and formed part of the meta-data generated by project. They resulted in cycles of ever-deepening analysis and learning. They also enabled triangulation of findings across project activities from different perspectives across different points in time. The strength of this collective process lay in generating a rich interpretation of the complexity of the health system, as viewed from different angles. Rather than the positivist approach to triangulation as consensus-making, triangulation was used to “develop a complex picture of the phenomenon being studied” (Liamputtong & Ezzy, 2005).

Table 4.4 shows the mix of primary data and layers of reflection that are all part of the evidence generated in the DIALHS project, and the position of this sub-study in this mix. This sub-study (see \*) generated data that went into the pool of DIALHS data, which formed the basis for reflection on learning across project activities, and benefited from being seen in relation to data generated in other activities.

**Table 4.4 Data generated by DIALHS project activities**

Activities and engagements which generated data		Data generated	
Situational analysis		<ul style="list-style-type: none"> <li>Stakeholder interviews</li> <li>Observations of meetings</li> </ul>	
		<ul style="list-style-type: none"> <li>Review of policy documents and minutes of statutory meetings</li> </ul>	
Cycles of planning, implementation, review and reflection	Planning of interventions <ul style="list-style-type: none"> <li>Community profiling and Local Area Groups</li> <li>Support for Environmental Health Practitioners</li> <li>HIV/AIDS &amp; TB programme roles</li> <li>Sub-study: The transitions process from nurse to facility manager</li> <li>Sub-study: The information used by facility managers in routine decision-making*</li> </ul>	<ul style="list-style-type: none"> <li>Presentations and meeting/workshop notes</li> <li>Interview transcripts</li> <li>Observation notes</li> </ul>	Composite reports
		<ul style="list-style-type: none"> <li>Document reviews</li> </ul>	
	Implementation of interventions	<ul style="list-style-type: none"> <li>Presentation, notes of meetings, field notes and reports</li> </ul>	
	Review and reflection	<ul style="list-style-type: none"> <li>Notes and transcripts of the reflection</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
Operational meetings and reflection of the research team		<ul style="list-style-type: none"> <li>Meeting notes</li> <li>Transcripts of meta-reflections</li> </ul>	

Legend: \*This research  Primary data  Secondary data  Meta-data generated

Source: Modified from Lehmann and Gilson (2014, p4)

#### 4.9.12 Developing *thick descriptions* based on individual's experiences

Phase one covered the document review, individual interviews and observations. Key elements of the initial analysis which were embedded within the interview and observation

processes - such as interpreting meaning within an interview or observation, making sense of an emerging story with the facility manager, using a simple planning model to identify decision processes during observations, developing and using a typology to describe different types of information and knowledge - have already been described in the relevant sections above. This section will focus on other analytical activities undertaken in phase one.

The researcher read all interview transcripts and observation notes before doing the next observation and/or interview, to make sense of the emerging data. In doing so, the researcher noticed that facility managers often made decisions in engagements with other actors, such as staff and clients, and in particular processes of engagement such as meetings and walkabouts. This led to a working proposition that actors and processes were particularly important, in understanding information use in decision-making in each case. This proposition was significant in steering the early stages of analysis. The data was carefully re-read to identify and highlight (using the text highlight function in Microsoft Word 2013) all engagements with actors, and the management practices or processes which held these engagements. The management practices or processes were then further scrutinised to identify decisions and information use. The researcher found that she had to train herself to recognise different forms of information and how they were used in different ways. The emerging picture was captured on a mindmap of each case, for each individual facility manager (see Figure 4.5 for an example), which was then presented back to and discussed with the facility manager at the next visit. This discussion gave the opportunity for the facility manager to validate and correct inconsistencies or misrepresentations, and to add further detail to the mindmap. It also served as a visual aid to sense-making, guided loosely by the question: *What does this mean?* ; and reflective learning, guided by the question: *What can you/we learn from this?*

As the volume of interview transcripts and observation notes increased, the researcher found it was necessary to separate the evidence into three different case databases, which Yin (1994) describes as a “central repository” of all the evidence relating to that case. While the researcher had intended each interview to focus on only one of the cases, facility managers responded to some of the open-ended questions by exploring issues that cut across different cases; observations also generated data on all three cases.

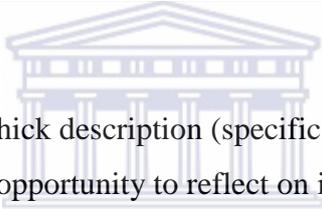
A significant step in the analysis was to re-read all interview transcripts and observation notes, and to systematically extract all the evidence pertinent to each case in separate Microsoft Word documents. At this stage, the evidence for City Health and MDHS were kept separate, as the organisational contexts were deemed potentially different enough to be considered as two units of analysis. This meant that two documents were produced for each case. Many extracts were relevant to more than one case, and were copied into all relevant case documents. This was seen primarily as a sorting rather than a paring-down process. The researcher tried to allocate as much as possible of the original interview and observational data to cases, so that it remained active in the subsequent analysis. Managing the volume of data is a common problem when doing case study research (Eisenhardt, 2007).

The next step was to develop a thick description for each case (one set for City Health and one for MDHS). This proved to be very difficult as evidenced by a number of entries in the researcher's journal, which lament having "got stuck in the starting" and "not knowing how to start". Finally a workable approach was found in seeking to "tell a story" by answering the set of questions, shown in Box 4.2. These questions drove the descriptive analysis, and guided the structuring of the story. At this point the researcher developed a typology to describe the forms of information that emerged. This typology was tested and extended as the case databases were re-read, and as the thick descriptions were written.

Describing the area of management in specific terms was important in defining the case in a way that made sense to the facility managers. For example, *managing leave of absence* was understood to include the following domains: managing annual vacation leave, training (both prescheduled training as part of a work skills plan and ad hoc courses), and sick and family responsibility leave. Each domain consisted of a number of key decision-making processes. For example, managing annual leave consisted of annual scheduling of leave, authorising leave, revising the leave plan and developing contingency plans to accommodate leave not taken. Detailed descriptions were then constructed of how the facility manager engaged with other actors in routine practices, how and when information was being generated and used, and what decisions were made.

## Box 4.2. Questions driving the writing of the thick descriptions

1. What does this area of management (the case) entail?
2. What are the key decision processes or activities?
  - What is the nature of the decision processes or activities?
  - What are their time horizons?
3. What information is being used in the key process?
  - Map formal and informal information and knowledge.
  - Who is mandating the information (facility, sub-district, district and above)?
4. How is this information being used?
  - What information gets used at what point the process?
  - Sequencing of information.
  - What knowledge is being deployed by people in different places, to different ends?
5. What decision-space does the facility manager have?
  - What do facility managers see as their role, and what do they chose to focus on and what don't they [focus on]? What do the policy and procedure guidelines require of facility managers?
  - What authority do they exercise?



Each facility manager received a thick description (specific to their organisation) for each case via email, and was given the opportunity to reflect on it in an interview. Generally the facility managers added very little to the story at this stage, and it appeared that most of the reflective learning on individual stories happened earlier, in discussing the mindmaps. The review of the thick descriptions was however important in validating the findings, and one facility manager also used the opportunity to remove one example of information use with which she was uncomfortable. This was deemed appropriate in terms of the negotiated ethics of the relationship and was judged not make any material difference to the story being told.

### 4.9.13 Reflective learning workshops

In phase two of the data collection and analysis process, all the facility managers in the sub-district were included as participants in a workshop series. In addition to the three remaining index facility managers, (one had left the health service by this stage), there were thirteen others who represented the entire peer group of facility managers in the sub-district, reporting to the same line managers. Workshops are a recognised means of engaging participants in methods of collective data collection and analysis in participatory research (Veale, 2005;

Chevalier & Buckles, 2013). In this research, workshops were chosen as they allowed for a longer engagement than is typical in a focus group discussion (Finch & Lewis, 2003), and could serve as a container for a number of activities.

Three half-day workshops per organisation – each covering one of the three cases – were facilitated by the researcher as part of a collective reflective learning process. The facility managers from the two organisations (City Health and MDHS) met separately for the following reasons: they functioned as separate peer groups both formally and informally, supporting one another; the organisational context was sufficiently different; and, as with focus group discussions, eight participants per group were considered ideal (Finch & Lewis, 2003). The workshops were audio recorded to assist note-taking, but these recordings were not transcribed. A colleague on the DIALHS project attended two workshops to support note-taking, to provide peer review. At the start of each workshop, the principles of engagement were re-negotiated. These included active participation, respectful listening, not interrupting others until they had finished their thought, and sharing the discussion equally, i.e., not dominating. In the second and third workshops there was a structured opportunity at the start of the workshop to think about any learning from the previous workshop which had been useful in each individual facility manager's practice in the ensuing month. This was followed by a brief presentation of the next case as the topic of discussion, generally by one of the index facility managers, but if not, by the researcher. Over the course of the workshops, this component was reduced substantially, as it was found that the peer group engaged better when they were only given a brief introduction to what sort of decisions and activities comprised the case, and then allowed to draw on their own experience in discussing the case. Peer validation of the findings generated in phase one, and testing of their generalisability, did not happen as originally planned through reviewing these findings, but through the peer group generating a collective account which, when triangulated with the findings of the individual work, served to validate it and confirm its generalisability. The workshop series also elicited further data and allowed collaborative analysis. As with focus groups, the interaction between participants was synergistic, as explained by Finch and Lewis (2003, p171):

*... the group works together: the group interaction is explicitly used to generate data and insights. ... In responding to each other, participants reveal more of their own frame of reference ...*

The collective accounts were much richer in exploring the influence of the health system context on facility management than the individual engagements with participants had been.

To encourage active participation, and to activate thinking, participants were sometimes asked to turn first to the person next to them to discuss a question as a pair; this was usually given a fairly tight time limit such as three minutes, and then they were asked to bring their thoughts to the group. Generally open discussion was preceded, and sometimes ended with a round where each participant been given an equal turn to contribute their thoughts. In the open discussion, the research sought to explore emergent thinking in more depth. Examples of questions used are: *What else does this mean in your experience? Why is this important in your experience?* The diversity of opinion within the group was also explored. An illustrative example of the plan for one of the workshops is shown in Box 4.3. Workshop reports were synthesised and distributed back to participants at least a week before the next meeting.

#### **Box 4.3. Plan for workshop with MDHS on managing efficiency of service delivery**

##### Introduction

- Ground rules – negotiating group principles for creating a comfortable environment for learning.

##### Continuing the learning

- Round 1: What did I learn from the workshop on managing leave that has been useful to me in my practice this month?

##### New learning

- Presentation by index facility manager on the key decisions, informal and formal information used in managing intake, flow and work allocation – 10 minutes.
- Discussion in pairs: What rings true with your experience, what is different from your experience, what do you want to add? – 10 minutes.
- Report back to plenary: 5 minutes per pair.
- Round 2: What are the particular challenges you have in this area of management in your facility?
- Open discussion.
- Round 3: Where does the health system work well in supporting you and [where] does it not work well?
- Open discussion.

*Facilitator to ask checking questions to ensure that any differences in facility contexts are understood, and to ensure equal participation.*

#### 4.9.14 Constructing the final case reports - phase two

Building on the collaborative analysis in the workshop series, the next step was to construct a single case report for each case. In doing so the researcher drew on two sets of synthesised findings: the thick descriptions (constructed from the individual interviews and observations) and the workshop reports. Each case had two case descriptions and two workshop reports - one for City Health and one for MDHS. The differences between the two organisations, while important to the participants, were found to be more in the particular detail than in the larger picture; for example, the introduction of a new Human Resource policy was implemented slightly differently, but in both cases was recent and did not anticipate the needs of the facility managers. In discussion with the DIALHS peer group, the researcher decided that these differences were not significant enough to warrant treating City Health and MDHS as separate units of analysis, so the stories were combined at this point, though where relevant, differences between the two organisations were described. The case report took cognisance of a finding which emerged in the workshop series, that the information used by first-level managers (those in small facilities who managed their staff directly) and second-level managers (those in larger facilities who managed through heads of department) was different, and so further analysis sought to systematically document these differences.

The researcher analysed the thick descriptions and workshop reports for each case, to draw out themes related to the nature of decision-making, the use of information and the influence of the health system context. As themes emerged, the researcher returned to the case databases to re-read extracts of the original interview transcripts, observations notes and workshop notes, to ensure that themes were accurately supported by the evidence. The final three case reports differ from the thick descriptions, not only in that they reflect a collective voice (in that they include the workshop data) but in that they move beyond descriptive analysis to answer questions such as "How?" and "Why?" and offer an explanatory account of how information is used in decision-making. Each case was examined to determine what made it unique and what particular learning this offered. The final case reports follow in Chapter 9 - Cross Case Analysis.

#### 4.9.15 Cross case analysis - phase three

In the last analytical step the academic researcher conducted a cross case analysis. The steps in this process are depicted in Figure 4.6. The researcher followed the approach advocated by Stake (2006), seeking to move beyond the detail of each case and to explore how the individual case findings speak to the broader phenomena of interest, i.e., how information is used in decision-making and influenced by the health system context:

*The main activity of cross-case analysis is reading the case reports and applying their Findings of situated experience to the research questions of the Quintain.*<sup>21</sup> (Stake, 2006, p47)

First a set of themes based on the research question and objectives were defined, then each case report was read to identify a set of high-level findings for each theme. New themes were added where the findings suggested an emerging theme represented by a single or cluster of findings not covered by existing themes. Some of the findings were copied to two or more themes. This was one of the key activities of the cross case analysis in this research. In generating findings, the researcher sought to stand back from the learning so far, and to use a different lens to make meaning of the data by looking for patterns in information use and the influence of the health system context. This process is explained in one of Stake's earlier books as follows:

*The search for meaning often is a search for patterns, for consistency, for consistency under certain conditions, which we call 'correspondence' ... Sometimes, we will find significant meaning in a single instance, but usually the important meanings will come from reappearance over and over ... Often, the patterns will be known in advance, drawn from the research questions, serving as a template for the analysis. Sometimes, the patterns will emerge unexpectedly from the analysis.* (Stake, 1995, p78)

These findings were then re-read and sorted, according to their similarity, into a set of findings. Each set of findings was then read, and guided by the questions "What does this tell us about the phenomena of interest?" and "What does this mean?", a set of assertions were

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<sup>21</sup> Stake chooses a word which is not commonly used to denote the phenomenon or condition, as larger than the project or programme that is the target of study.

written about them. Stake defines an assertion as “a researcher’s summary of interpretations and claims” (Stake, 1995, p169) and suggests that each assertion should have a single focus, an orientation for supporting the Quintain, and evidence to support it. How this process was followed in this research is illustrated in the example given in Table 4.5.

**Table 4.5. Process of deriving assertions for theme in the cross case analysis**

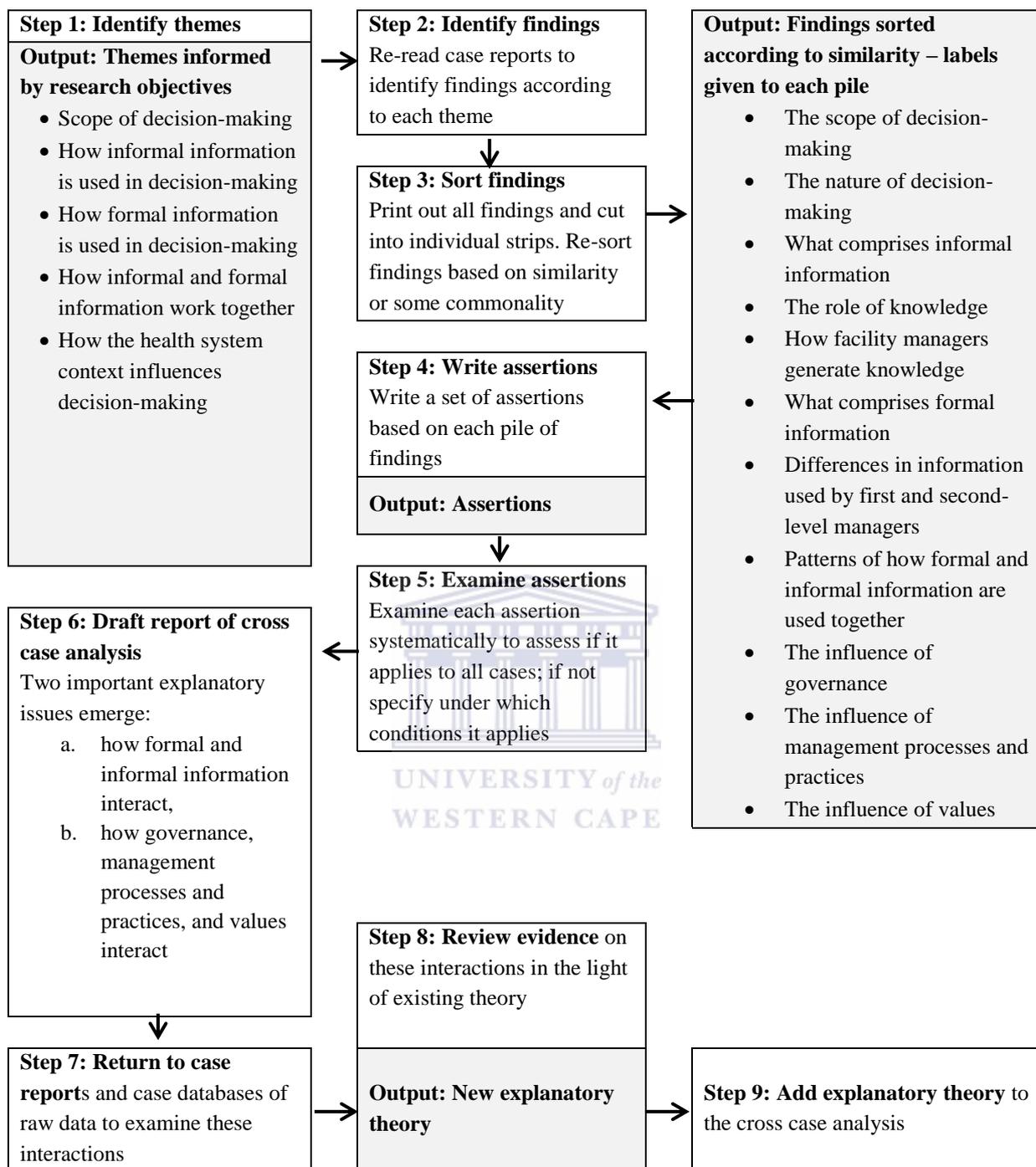
<p><b>Theme 4 (derived from objective 4)</b></p>	<p>How formal and informal information work together</p>
<p><b>Example of one subset of high level findings related to theme 4</b> (these findings were grouped together as they all have a temporal element)</p>	<ul style="list-style-type: none"> <li>• Different types of information and knowledge are used at different times in a decision process</li> <li>• Monthly review of programme performance uses formal information from the HIS</li> <li>• Immediate management of long waiting times uses informal information (complaints and staff reports)</li> <li>• Managers look for formal information later to substantiate ad hoc decisions in managing staff</li> </ul>
<p><b>The assertions derived from this subset of high level findings</b></p>	<ul style="list-style-type: none"> <li>• Facility managers use informal information to make on-the-spot decisions</li> <li>• Proactive planning uses a mix of formal and informal information and knowledge</li> <li>• One relationship between formal and informal information is that of sequenced use</li> </ul>

Importantly, one finding could support different assertions in relation to different themes. For example, the fourth finding in the above example, “Managers look for formal information later to substantiate ad hoc decisions in managing staff”, was also placed under a theme that was to do with the purpose of information use. Speaking to this theme the finding led to another assertion which was that formal information was sometimes used to substantiate informal information, and vice versa.

The assertions were then examined systematically to assess whether they were supported by evidence from all the cases or whether they were unique or more relevant to one case. If the latter, then the reason for this uniqueness or relevance was recorded as part of the assertion. This comparative step deepened the analysis, tested the strength of evidence and added substantially to the rigour of analysis. Disconfirming evidence (Gilson et al., 2011) was looked for at this stage, and was often used to refine an assertion. For example, the assertion “Facility managers use informal information to make on-the-spot decisions” was modified based on finding disconfirming evidence in the case database on managing programmes: facility managers also remember and use formal information, which is reviewed in the monthly sub-district meeting, on whether they are meeting a priority target to make on-the-spot decisions. The modified assertion therefore reads: “On-the-spot decisions often privilege informal information”.

When the assertions were written up in a report, two explanatory issues emerged, which required further exploration: how formal and informal information interacts in patterns; and how governance, management processes and practices, and values interact in influencing information use. To explore these issues, the researcher returned to the case databases of raw data, thick descriptions, workshop reports and case reports, to examine the evidence underlying them. Further, this evidence was examined in the light of existing theory (as reviewed in Chapter 10 - Discussion), to generate explanations for them, and this led to the generation of new theory aligned with the research objectives. This was therefore an iterative process of case findings-to-theory comparison and modification, which is what Yin (1994, p36) has called “analytic generalisation”.

The steps in this cross case analysis are represented below in Figure 4.6. As well as looking for patterns and coherence in the data, as Stake suggests, there was also a layer of *sense-making*, as the researcher interpreted findings against a backdrop of understandings drawn from the broader research process, which included: reflection on personal experience; engagement with the literature; development of the conceptual framework; co-production of the rich descriptions and collective reflective learning; and the process of DIALHS meta-reflections. All these understandings served as a frame of reference for the identification of patterns, findings, emerging themes and drafting of assertions. Sense-making, a concept developed in the seminal work of Karl Weick (1995), is the process of interpreting and re-



**Figure 4.6 Steps in conducting the cross case analysis**

interpreting experiences and events, located within a specific context, to make meaning of them and understand the implications for action. It consists of three elements - *a frame*, *an extracted cue*, and *a connection* – and works both subconsciously and consciously. The value of sense-making has been shown in organisations, where it has a role in managing and responding to situations of complexity and change (see for example Weick, 1993; Weick,

1995; Gilson et al., 2014). It has also been applied, as in this research, as a diagnostic tool in the analysis of qualitative data (Paull, Boudville & Sitlington, 2013). In this application the cue (operating at the subconscious level) was sometimes a feeling of surprise or disjuncture in uncovering a finding which was not consistent with what was expected (i.e. the frame of reference, which is also subconscious). This created a connection (operating at a conscious level), which was the opportunity to ask: “What is going on here?” and “What action is needed?”<sup>22</sup>. In this research the cues more often included feelings of excitement in recognising a finding as new, or confirmatory of an emerging theme. The second question - implications for action - were understood in this research more in terms of: What does this mean for the development of assertions (and theory)? What assertions need to be interrogated further, amended or added? This prompted iterative cycles of analysis in line with the view that sense-making is: *“about continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in the face of criticism.”* (Weick, Sutcliffe & Obstfeld, 2012, p416).

#### 4.10 Rigour

In the design stage, theoretical and conceptual rigour (Liamputtong & Ezzy, 2005) was ensured by the development of a conceptual framework, which generated a loose set of propositions which guided the case selection and data collection (Yin, 1994; Gilson et al., 2011). A multiple case study was selected as the research design, for its coherence with the explanatory research question and allowance of context and complexity to be explored; this was deemed important in understanding the influence of the health system on information use in decision-making. Peer review (Gilson et al., 2011) within the DIALHS project tested the logic of the framework, and the fit between the research question, paradigm and strategy. In the first phase of the data collection and analysis, an operational set of definitions were defined for formal and informal information, and a typology for different forms of knowledge which added conceptual clarity.

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<sup>22</sup> Note the parallel to Stake’s questions: “What does this tell us about the phenomena of interest?” and “What does this mean?”

During the data collection stage, procedural rigour (Liamputtong & Ezzy, 2005) was ensured firstly, through the systematic recording of key informant interview notes, observations (Mays & Pope, 1995) and field notes. Interviews with facility managers were recorded and transcribed. Secondly, a formal case database (Yin, 1994) was created for each of the three cases, which served as a central repository of all original data, as well as various key stages of synthesis, represented by the early annotated and final versions of the thick descriptions and the workshop reports. Thirdly, an audit trail was developed in the form of a researcher journal which described what decisions were made when and how the method evolved in the participatory process, with sub-district and facility managers, the methods of data collection and steps in interpretation (Gilson et al., 2011). Further, data collection used multiple methods (document review, direct observations, interviews, workshops), multiple strategies within the interviews (reflective learning, description of critical incidents, story telling and review of mindmaps) and multiple sources (e.g. interviews with facility managers as well as a range of key informants), which allowed triangulation of methods and sources (Yin, 1994; Gilson et al., 2011). This research used another form of triangulation which is potentially novel, in that the researcher was not able to find its use reported in the literature. Findings and interpretations were triangulated across different points in time in a five year process. Important shifts occurred in the index facility managers' understanding of their own management practice, and in its execution, as they became more reflective in their everyday practice. This added another perspective to the findings. The use of triangulation to develop a complex picture of how information was used in decision-making, was aligned with the relativist ontology adopted, which understands there to be multiple perspectives of reality. This is different from the positivist use of triangulation as a strategy to avoid bias, and to approximate *the one true reality*. Data from the individual interviews and observations of facility managers at work, as well as interpretations of this data, were checked with the index facility managers during and after the data collection process (Gilson et al., 2011).

During the various iterative cycles of analysis the principles and procedures for data organisation and analysis were fully described in the researcher's journal. Facility managers were actively involved in making sense of the data as it was collected, and in facilitated individual reflections on the meaning of the data, and the narrative that was emerging. The workshop series allowed for data and analysis generated in phase one to be checked with the wider peer group, and for a collective voice to emerge which represented another perspective

of reality. The monthly operational and bi-annual reflective meetings of the DIALHS project team were used for peer debriefing and review (Gilson et al., 2011) and served to test the emerging analyses and interpretations in the light of a broader suite of work, dealing with health system governance and relationships between actors. The prolonged engagement (from the start of the DIALHS project through the proposal development for this research in late 2011, to the final write up of this thesis in late 2015) also added to the rigour (Gilson et al., 2011).

There were three opportunities to search for disconfirming evidence (Gilson et al., 2011; Creswell & Miller, 2000; Mays & Pope, 1995) during the analytical processes. The first, in stage one, was while developing thick descriptions. The researcher attempted to give as thick a description as possible, including as much detailed data as possible, without rejecting insights which seemed to be at odds with the emerging narrative. At this point, the researcher assumed that decisions were made based on some form of information that could be categorised as formal or informal, however it soon became evident that “that which informed decisions” was also knowledge, and so a typology of knowledge was added to the ongoing analyses. The second opportunity to look systematically for disconfirming evidence arose in step 3 during the cross case analysis. Once assertions were generated from the high level findings, the researcher returned to each the case database to test the robustness of the evidence for the assertion. Modifications were made to the assertions based on finding negative evidence, but this was more a matter of degree. For example the assertion “formal information is used to substantiate informal information” was changed to “formal information is sometimes used to substantiate informal information”. The third opportunity for disconfirming evidence was during the development of the middle range theory, as described in Chapter 9 - Cross Case Analysis, when the theory was tested and modified against the evidence, until it provided a helpful representation of the dynamics influencing information use.

Theoretical and conceptual rigour continued during data collection and analysis, in what Gilson et al. (2011, p6) describe as:

*a constant process of conceptualising and reconceptualising—using ideas and theory to develop an initial understanding of the problem or situation of focus to guide data*

*collection, but using the data collected to challenge those ideas and assumptions and when necessary, to revise (the) ideas in response to the evidence.*

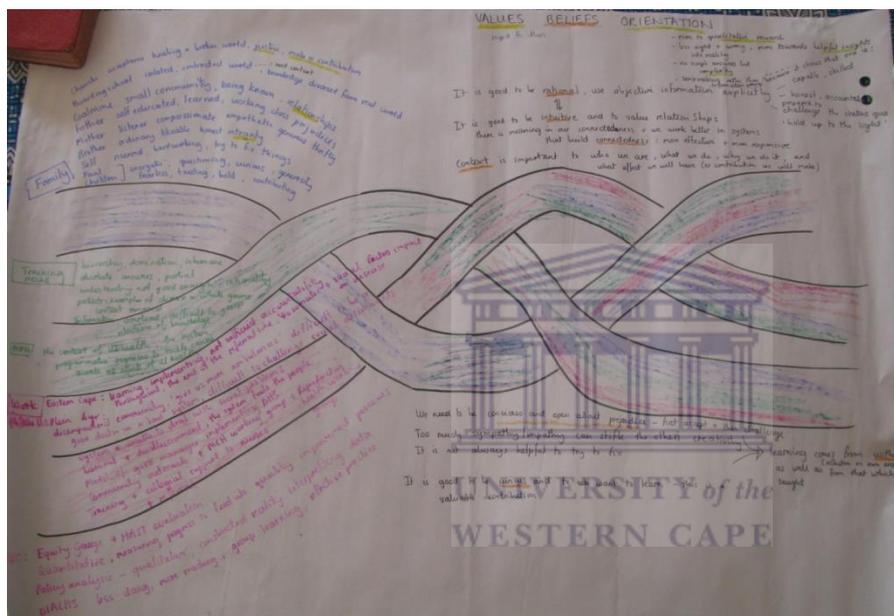
This process is illustrated in detail in Chapter 3 - Conceptual Framework.

In writing this thesis, the researcher sought to establish a chain of evidence (Yin, 1994) which connected the research questions to the methods, to evidence in the case database, and to citations used to illustrate the findings in the report. The relevance of the findings was tested both against the aim and in their ability to generate new insights (Malterud, 2001), especially for facility managers and sub-district managers. The latter was tested with the index facility managers in three collaborative poster presentations (Xapile et al., 2013; Emmett et al., 2013; Dinginto et al., 2013) and a panel discussion at a national public health conference (DIALHS Project, 2013) as well as jointly writing an article for a national public health publication (Scott, Dinginto & Xapile, 2015). Further, the findings and implications were tested with the sub-district managers in dedicated feedback meetings. The findings generated were found to resonate with the facility and sub-district managers' experience, and open them to new insights, which was judged to be an important indication of this research having worth. The findings were also tested with academic colleagues in the DIALHS project as part of an ongoing peer review process, supporting this research. This allowed findings to be examined in the light of other work done with sub-district and facility managers in the research setting.

Reflexivity added to rigour throughout the research process. It is defined as “the process of examining and recording the impact of researcher and intersubjective elements in research” (Freshwater, 2005, p311) . Reflexivity has been noted to be particularly important in observation when it is difficult to record everything comprehensively, meaning that the researcher has to be selective (Mays & Pope, 1995). However more generally, in qualitative research the researcher is understood to be the “primary instrument” of data collection and analysis (Merriam, 2009, p52), and it is important therefore that attention be paid to potential bias, sensitivity and integrity.

The researcher kept a research journal which, in addition to documenting the research process, was used to reflect on how she was responding at a personal level to the research experience from design through to theory-building: these reflections focused particularly on

the decisions that emerged and needed to be negotiated, and on relationships and interactions in the field and with peers in the DIALHS project. In writing journal entries, the researcher sought to suspend judgment and include reflection on personal feelings and reactions, such as surprise, discomfort, anxiety (Moon, 2004). In this, she sought to be reflexive about how her background (including formative training), perspectives and motives, affected how the research question and preliminary propositions were framed (Malterud, 2001) and how it formed a lens through which she approached data collection and analysis. This was first expressed in a rich map or picture (Cristancho et al., 2014), shown in Figure 4.7 and then described in greater detail in the research journal.



**Figure 4.7. Rich map exploring the influence of life experience on the researcher’s beliefs and values**

The map shows how various strands of experience (family and early life; medical training; Masters in Public Health training; work as a medical doctor; work as a researcher) came together to create of set of values, beliefs and orientations. The researcher was mindful that her initial training as a medical doctor had orientated her towards biomedical and positivist approaches, but that this had shifted considerably during subsequent studies (Masters in Public Health) and work in Health Policy and System Research. Her previous research in HISs had left her frustrated that formal information was not used more efficiently, and became the energy behind wanting to support facility managers in decision-making.

Freshwater (2005) contends that it is no longer necessary to attempt to be a neutral researcher but rather to assess subjectivity. The advantage is then that “[b]ias, in the sense of undesirable

or hidden skewness, is thus accounted for, though not eliminated" (94, p484). In describing rigour from an interpretative perspective, Liamputtong and Ezzy (2005, p37) build on Max Weber's concept of "value-free" research, in proposing that researchers should be "taking into account the influence of subjectivity but attempting to minimise it".

A particular challenge throughout the research process was to explore the role of formal and informal information without placing value judgments on their respective use. In the early stages of the research, the researcher found that she began to feel empathetic towards the facility managers who were struggling to validate their facilities' routine information and who felt harshly judged in failing to achieve targets they felt were not attainable. She realised that she had to learn to observe the emotional reactions of the facility managers, without taking on their emotions herself, as this otherwise introduced a bias. She had to learn to see the different types of information as neutral, and to be curious about the role and value of each type of information in different situations. This objectivity required that she stay sensitive to the emotional substance within the stories that the facility managers told of their experience, and accept it as important data and a cue for further enquiry. To react emotionally would be to pre-judge and curtail the enquiry. The journal was particularly helpful in expressing and monitoring her own emotional reactions during the research process, and became of tool that she used to *observe herself*.

The reflexive process also helped her assess her own performance as a facilitator of individual and collective reflective practice, and to develop greater sensitivity and skill in the process. This is illustrated in the extracts from the researcher's journal shown in Box 4.4.

#### **Box 4.4. Using journaling in a reflexive process**

***Extracts from researcher journal, 17 July 2013***

*I planned this workshop about 6 weeks ago. First it had to be postponed because of the measles campaign in May and then in June it was postponed so that I could have a meeting with (X) beforehand regarding the time given to the workshop. As a result I felt a bit stale going into the workshop today. I had spent quite a few hours preparing notes and updating my consent forms etc. but I felt quite far removed from the original data [I had collected]. At first I was disappointed about this but then I saw it has the potential benefit. If I was still very attached to my original data, I might have tried to use the workshop space to fill in gaps and might have been too wedded to the information that I already had, whereas today I was very open to new ways of framing this and new information ...*

*I'm not sure though that in our discussions we were really getting at what was crucially important to the facility*

*managers ... It was so difficult for me to keep listening attentively which I really tried to do as well to ask incisive questions and move the conversation towards the sort of depth that I was hoping for, especially unpacking the other context influences on managers. Also a lot of discussion lacked freshness for me, perhaps because I've heard it before. I suppose in some ways that's a good thing because I'm reaching saturation point and this information is useful in triangulating what I've heard beforehand in interviews and during observations. In a way I wasn't sure whether I was giving enough back ... This is not a meeting which closes a chapter but rather opens a conversation, a peer sharing process which leads to developing a peer voice and peer learning generating ideas of how to work with structures, processes and policy to better support facility managers in using information and managing better ... I'm still trying to understand my own reaction because I do feel down. Perhaps this is just a reaction as this is an important day, actually holding this first meeting.*

## 4.11 Ethics

In this research the legal requirements - which have also been called “procedural ethics” (Liamputtong & Ezzy, 2005) - were observed in attaining ethics approval from the Senate Research Committee of the University of the Western Cape and written permission to conduct the study from the respective health departments of the Provincial Government of the Western Cape and City of Cape Town. Verbal permission was also obtained from the sub-district managers. Written informed consent was obtained at the start of this research from the index facility managers, to conduct all interviews and observations (see Appendix 4 for the Participant Information Sheet and Consent Form), and from key informants and workshop participants. The nature and purpose of the study, and potential risks and benefits, were discussed with facility managers and key informants. Participation was voluntary with the right to withdraw at any stage.

Gilson (2012) has argued that the ethical issues in conducting HPSR are similar to the concerns of all health research, but that in addition, there are particular ethical debates. Writing in the field of health policy and systems research, Molyneux et al. (2009) suggest that to adhere only to legal obligations is not sufficient: “*the social relationships established between researchers and field-teams and community members, are critical to fulfilling the moral (as opposed to legal) aspects of ethics guidelines*” (Molyneux et al., 2009, p324). Their research in South Africa and Kenya leads them to suggest that while an independent ethics review process is important, the emphasis of a review should be on the proposed relationships between actors, rather than on the design and tools. They call on researchers to review, reflect on and re-negotiate relationships during the course of the research, rather than anticipate that

informed consent at the start of a process is sufficient. This is similar to the notion of a creating a “living ethical agreement” (Reid & Brief, 2009) which sees research ethics not as a “stage of research” but as a continual consideration. A similar approach is advocated by Cordner et al. (2012, p163) in their work on environmental health. They use the term “reflexive research ethics” to denote an approach which involves iterative reflection upon the research relationships in the light of the principles of professional and scientific conduct. This means reflexively becoming aware of “a moment of ethical uncertainty” and addressing this by “the continued adjustment of research practice according to more relational and reflexive understandings of what might be beneficent or harmful”. This view is in keeping with the constructivist orientation of this research, which accepts that ethical issues can, and should, be understood from multiple perspectives, and that they always involve judgement. In this research, the researcher sought to be reflexive about the ethical issues that arose, and to invite the facility managers to contribute to ethical decision-making. In total, ten “moments of ethical uncertainty” (Cordner et al., 2012) were identified. As some stretched over prolonged periods, they were considered “dilemmas” and are described below. They arose from the consideration of the relationship between the researcher and the facility managers a propos three fundamental ethical values that have been identified as underlying both biomedical and health-related social research (Molyneux et al., 2009, p324):

*(a) beneficence and non-maleficence, i.e., that research on human subjects should produce some positive and identifiable benefit, however indirect and long-term, and that researchers should avoid harming participants; (b) respect for persons and, increasingly, communities, i.e., that the values and decisions of research participants and the communities from which they come should be respected, and; (c) justice, i.e., that people should be treated equally.*

Further, these values were considered in how they related to a set of principles which were first developed as guidelines for clinical research in developing countries (Emanuel et al., 2004). The principles include: collaborative partnerships, social value, scientific validity, fair selection of study population, favourable risk-benefit ratio, independent review, informed consent and respect for recruited participants and study communities. These principles have been successfully applied to participatory action research (Khanlou & Peter, 2005) and are thus relevant to this research. In addition, this research has benefited from ethical insights in the field of ethnography (Murphy & Dingwall, 2007) and community-based research (Reid &

Brief, 2009; Participants in the Community Engagement and Consent Workshop, Kilifi, Kenya, 2013; Blake, 2007).

In this research, participants were selected on the basis of belonging to a particular cadre of health managers (primary healthcare facility managers) in the research setting. This research was one of two sub-studies within the DIALHS project which ran in parallel, both of which sought to understand and make recommendations on how better to support facility managers. Both sub-studies offered benefit to the individuals involved through facilitated reflective learning. All the facility managers participated in either one or other of the two sub-studies. The principle of fair subject/participant selection was further ensured in that those who bore “the risk and the burdens of research” - the index facility managers - were also those who stood to benefit the most. In this research, the opportunity to learn was extended beyond the index facility managers to the rest of the peer group in stage two. The principle of scientific validity was carefully adhered to; the evidence for this is given in the descriptions in the rest of this chapter of how the research question and conceptual framework were developed, and how the data was collected and analysed.

The first ethical dilemma which faced the researcher was whether the index facility managers were sufficiently informed, given that the nature of the research process was emergent and that it was anticipated that the research would extend over a period of a few years: this proved to be true with data collection, analysis and joint writing for publication taking approximately four years in total. It was not possible to specify, in advance, exactly what the research would involve. The informed consent form, which formed the basis for a discussion with facility managers who were interested in being part of the study, therefore stated that participants would be involved in decisions and processes regarding ethics, development of research activities, review of findings and interpretation of findings. Rather than assuming comprehensive information upfront, “being informed” was conceptualised as a process, and was understood to happen in the context of being part of the decisions as they emerged. The facility managers were understood to be empowered agents within this process. This approach to consent has been modelled in ethnography, where consent is understood to be sequential and is negotiated and re-negotiated over time (Murphy & Dingwall, 2007). When informed consent is negotiated within a relational context between the researcher and the researched, trust is very important. In this research, it was found that trust could not be

demanded but had to be grown incrementally within the context of the relationships. There were moments of testing of intentions, such as when the researcher represented some of the emerging findings in sub-district meetings, but this was against a backdrop of ongoing relating and being found to be trust-worthy in more routine aspects too, such as being dependable, communicating progress and demonstrating interest in how facility managers understood their practice.

A second, related, dilemma concerned the extent to which consent was voluntary. As the research question had been developed with the sub-district managers in the broader DIALHS project, and was in line with the direction that the sub-district management was taking in building capacity among the facility managers, there was a strong expectation by sub-district managers that the facility managers would participate. It could not therefore be assumed that the participation of facility managers was voluntary. It was important to discuss this openly with the facility managers and to ensure that, independent of the sub-district managers' expectations, they wanted to participate, and that this was based on some positive internal motivation. All the facility managers saw the research as supportive and offering opportunities for professional growth. Further, the facility managers, the researcher and the broader DIALHS team, while mindful of the potential hierarchical power dynamics at play, judged the sub-district context to be supportive rather than coercive. Importantly, facility managers were invited to influence the methods used and the research objectives, so that the research experience contributed to their own sense of professional development. Participation in the emerging process remained voluntary throughout.

The fact that the research question had emerged from work with sub-district managers also represented a third ethical dilemma, one in relation to the principle of social value. Khanlou and Peter (2005) caution that in applying this principle to participatory action research, the impetus for the research must be considered. In this research this caution meant that the social value had to be clearly considered in terms of potential power differentials, and that the research had to be designed to ensure that it benefitted the facility managers rather than the sub-district management. The researcher held herself accountable to the facility managers directly and not the sub-district managers in terms of the direction that the research took.

A fourth dilemma arose from one of the ways in which the participatory and emancipatory nature of this research was expressed. In traditional research the index facility managers would have been understood to be participants or “the researched”, while in this research they were invited into a more active role, that of being “co-researchers”. In keeping with the principles of participatory action research, this signalled a more equal, respectful relationship, and acknowledged the value of the tacit knowledge and learning that the facility managers brought to this research. Cornwall and Jewkes (1995, p1674) have argued succinctly for this:

*Ultimately, participatory research is about respecting and understanding the people with and for whom researchers work. It is about developing a realization that local people are knowledgeable and that they, together with researchers, can work toward analyses and solutions. It involves recognizing the rights of those whom research concerns, enabling people to set their own agenda for research and development and so giving them ownership over the process.*

Traditional research ethics assume that it is the researcher who is powerful and that the research participants are vulnerable and are to be protected from potential exploitation and abuse (Burgess, 2007). Since the facility managers were co-researchers, and no longer those assumed to be vulnerable, it raised the question of who should take consent from whom. Khanlou and Peter (2005, p2337) argue that within a PAR design, this remains with the initiator of the research:

*[I]t should be incumbent upon the initiator of the research to begin a process of information exchange that, in the broadest sense, would constitute informed consent. It may be more fitting to envision informed consent as a mutual negotiation process, where co-researchers determine the terms and conditions of their joint efforts.*

In enabling facility managers to be co-researchers, the researcher was relinquishing a certain amount of power, however it would have been unethical to consider that the power balance therefore became equal. While the researcher was a paid academic and was performance-managed to do research, the facility managers had full-time jobs managing multiple demands in their facilities, and the research was only one aspect of professional development that they were incorporating into their already-busy schedules. This meant that the time that they had available, and their level of engagement in the research, was necessarily different. Further, while the facility managers were involved in framing their own experience and were given

the opportunity to take this into a discussion with their sub-district and district colleagues at a national conference (DIALHS Project, 2013), the researcher played an important role in facilitating these discussions and focusing the learning on broader themes addressing health system strengthening. The ongoing power differential required that the researcher remained reflexive on issues of risk, benefit and voice, which are addressed below.

Despite a more equal power distribution, Khanlou and Peter (2005) warn that PAR is not conducted without risks. For example, in the context of community work, they identify potential political consequences as PAR challenges the status quo and, if the environment is hostile, participants may be left more vulnerable and exposed. Interestingly, in the setting of a health system in this research, this warning was applicable and arose as a fifth dilemma. The facility managers in both organisations responded to the research by seeking to establish a collective voice within the sub-district in their respective organisations. In the one organisation, they felt that they were not receiving sufficient assistance from some of the support departments (such as the human resource management and supply chain management departments), and decided to challenge this as a group. In the other organisation, they decided to find ways of working together collaboratively and actively to shape some of the ways in which they received support from the sub-district management office.

The risk-benefit ratio can be harder to judge in Health Policy and System Research (Molyneux et al., 2009) where risks are more likely to be psychological and social. This represented the sixth dilemma. In the field of ethnographic research, Murphy and Dingwall (2007) advise that the researcher does both a reasonable assessment of the actual risks involved, as well as a hypothetical worst case scenario. In this research there were no harmful procedures to human subjects but, from the start, it was anticipated that there could be personal risks, particularly for facility managers. These included possible exposure of flawed information use and decision-making, loss of professional standing among peers and subordinates, and loss of future promotion opportunities. However there were also possible benefits which included the opportunity to develop skills as a reflective practitioner, increased self-awareness, institutional recognition for the complexity of local decisions, increased professional standing and promotion opportunities. The research process and feedback actively sought to maximise the benefits and reduce the risks in the following ways.

The research was conducted within a broader project (DIALHS), which was framed as a learning initiative, which meant that any perceived “failure” could be recast as an opportunity to learn. Further, there was strong support from provincial and district managers for the broader DIALHS project, with a commitment to organisational learning enshrined in the Western Cape Department of Health vision (Western Cape Department of Health, 2013); this allowed risks to be minimised. Importantly the researcher remained reflexive throughout the research in seeking to fulfil the moral obligation committed to at the start of the research process (see Appendix 4): “I will strive to be honest and trust-worthy in my dealings and to act in keeping with the best interests of the participants”. While the original protocol made provision for any unforeseen harm as a result of participation to be addressed through the Employer Assistance Programme, this was not necessary. The protocol also made provision for any corruption uncovered to be addressed through the appropriate channels, but this was not necessary.

Anticipating the potential benefits for facility managers at the start had the advantage of working towards them more consciously. As part of their professional development, the index facility managers were eager to learn presentation and writing skills. Opportunities for this were actively sought and led to three poster presentations, a conference dialogue and one published paper (with another paper in the process). The benefit to the community and broader health system was, as is often the case with Health Policy and System Research, less immediate (Molyneux et al., 2009). Even now, at the end of this research, this benefit is less concrete and more theoretical in nature. With an increased understanding of how formal and informal information are coupled in decision-making processes, and with greater awareness of the need for multiple forms of governance to ensure that the generation and use of the various forms of information and knowledge are supported by the health system context, it is hoped that: starting in this sub-district, managers will be supported with the information that they require, to manage their facilities and staff effectively, and that this will lead to better service delivery, which in turn will translate into better health outcomes. For these benefits to be fully realised, a process of research dissemination is planned, as well as ongoing discussion facilitated by the DIALHS project with health system colleagues at all levels of the health system.

In working with facility managers as co-researchers, a seventh dilemma arose: the facility managers and the researcher had different, though overlapping agendas. The facility managers were most interested in learning about their own practice and what this meant for improving their management of the case areas, i.e., how to manage the efficiency of service delivery, programme priorities and leave of absence more effectively. In contrast, the researcher was more interested in learning about how information was used in each case, and was also seeking to contribute to theory. Stake (2006, p7) has expressed it thus:

*The pursuit of science seems to place the highest value on the generalizable, and the pursuit of professional work seems to value the particular the most, but they both need both. For the multi case researcher, this is a dilemma.*

What this meant practically, was that the researcher invested more than was required, in terms of this PhD process, in supporting facility managers in understanding what each area of management required of them. Further, it meant that, when it came to the cross case analysis in phase three of this research, the facility managers were no longer part of the reflection, as it was predominantly orientated towards contributing to theory. It was necessary to recognise and affirm the validity of the different agendas within the research relationship, and to give opportunities to shift between agendas, but not to force full participation along the whole research journey, or to be dishonest in pretending inclusivity and participation in areas where interests diverged. Part of the respectful relationship between the researcher and the co-researchers was to allow each to participate to the extent of their interest.

The eighth dilemma was anticipated and confronted at the very start of this project. While confidentiality is routinely promised in clinical research, it was understood to be impractical in this setting. The research site has been identified in other work published by the DIALHS project and all the facility managers employed in the sub-district during the time of this research participated, either as index facility managers or as peers. Anonymity was therefore never promised. In keeping with the practice recommended in PAR (Reid & Brief, 2009) the researcher undertook to discuss confidentiality with participants at each step in the research process, dealing with what should and should not, could and could not be anonymous. Further she undertook steps to ensure that study participants were not exposed as individuals; findings were reported for the collective. Interview transcripts and observations were coded to anonymise the data. Information gathered through the study was shared with all

participants in the form of thick descriptions and workshop reports, prior to public dissemination.

As well as being near impossible to promise confidentiality, it was also not deemed desirable within the context of this research. Burns et al. (2014, p140) have noted that confidentiality might “have the unintentional impact of constraining voice and the development of more egalitarian relationships”. As co-researchers and participants in the wider peer group process, facility managers wanted to be acknowledged and receive credit for the contribution that they were making, and for their voice to be heard. They wanted opportunities to present at conferences and to co-author papers based on their learning. Confidentiality and anonymity would have limited this. Importantly this issue also brought into focus the question of who should speak for the facility managers, particularly in a PAR project intended to be empowering. In this research, facility managers chose to develop a collective voice, so that they could speak for themselves when they chose. In this they were taking control of a whole range of decisions – the fora in which they would speak, to whom, about what, how it would be framed and phrased. Their initiative in this created opportunities for changing the system from within, and opened a discussion about whose voice would be more effective. The researcher learnt not to presume to speak for the facility managers. Reid and Brief grappled with a similar issue in relation to confidentiality in their work in community-based action research:

*The consequence of community confidentiality was that participants would have no assurance that their involvement may lead to social change. If their identities and the identity of their community were concealed, then ideas for change would not be able to be taken up. CBR is intended to increase community capacity. Yet, how can community capacity be built if the participants are perceived as, and treated as, needing protection? (Reid & Brief, 2009, p80)*

The ninth dilemma was that the research setting was a public one and involved a number of direct and indirect participants. Molyneux et al. (2009) have warned that, within HPSR, it is necessary to be aware of a range of other actors and stakeholders. This is also a frequent dilemma faced in ethnographic research (Murphy & Dingwall, 2007). While it was possible to negotiate consent with the index facility managers, peer facility managers and key informants, a number of more peripheral participants were identified (e.g. attendees at sub-

district meetings). They were provided with a verbal explanation of the study purpose and offered a participant information sheet. The observations in the facilities presented much more of a challenge. In their work Murphy and Dingwall (2007, pages unnumbered) described some settings as “typically highly complex and mobile and this makes obtaining written, or even oral, informed consent from all who pass through impractical”. They suggest distinguishing between “those for whom the research is likely to be consequential and those who are tangential” in determining who should be approached for informed consent. In conducting observations of facility managers in their facilities, the researcher asked to be introduced to staff, which was possible in the smaller facilities but not in one facility with a staff of approximately 180. In this facility, the researcher introduced herself in each department visited, and whenever the facility managers had any individual interactions with staff members. This was done with the permission of the facility manager and was judged to be less interrupting to her flow of work than if she had to remember to do the introductions herself. The researcher was mindful of interactions which were potentially of a sensitive nature, and excused herself on a few occasions (e.g. when a facility manager discussed the possibility of a disciplinary hearing with a staff member). When clients engaged individually with the facility manager, the researcher introduced herself and at times removed herself from the interaction if there was any sign of the client being nervous, upset or uncomfortable. The public nature of the setting meant that there was even greater responsibility for ethical action and interaction and that this could not be prescribed but had to be judged in each situation to ensure that the principles of informed consent (respect for human rights and dignity, voluntary participation, disclosure of purpose, risks and benefits) were adhered to. Murphy and Dingwall (2007) highlight the need for personal integrity and the importance of the ethical education of the researcher. A particular challenge in this research was that the setting was one which was not particularly sensitive to client privacy. For example it was common practice for staff to enter consulting rooms by knocking and entering without waiting for an invitation. Also the researcher was known to be a medical doctor and so was accepted as an insider with a wide degree of access (similar to other staff). It was for the researcher to remind the facility manager and staff that her current role was different, and to restrict her own access accordingly.

The last dilemma relates to the ethical review committee which gave approval for this research. As a newly established institutional committee, their approach was similar to that noted by Cordner et al. (2012, p162):

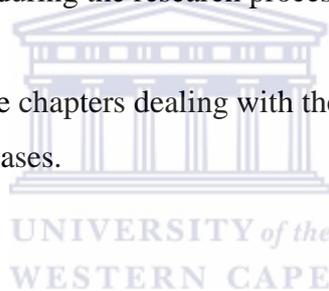
*Research ethics are often understood as ‘a rather static set of standards for conduct based on a system of moral values’ (Smith-Doerr 2006), operationalized through professional codes of conduct and formalized through the Institutional Review Board (IRB) protocols.*

HPSR highlights the danger of overemphasising procedural ethics. In this research, the researcher attempted to submit a report to the research ethics committee to update them on ethical decisions that had been made in the first year of the research. The administrative support to the committee was not sure what to do with the report, as there was no expectation that, having received ethical approval at the start of the research, the researcher would continue to be accountable to the committee for ongoing decisions, despite the longitudinal nature of the engagement and the different ethical issues arising at different times in the process. The dilemma was then who to be accountable to? While the researcher did not have the opportunity to remain accountable to the committee, she was able to remain accountable to the facility managers involved and to the broader DIALHS project, which also participated in periodic reflection on how to respond to emerging ethical decisions. Given the DIALHS team members’ intimate knowledge of and sensitivity to the particular relationships in the sub-district, it may be argued that they were best placed to assess the nuances of the ethical choices. Alternatively, it may be that, within the context of the relationship, it was most appropriately the facility managers who judged whether they had been treated ethically. However independent review still has much to offer, first in terms of objectivity, and second in keeping a broader focus, which encompasses those who are more peripherally affected by the research (such as the clients encountered in clinics in this research). The experience of this research highlights the ethical obligation of those who are engaged in HPSR to educate their ethical review committees.

## 4.12 Summary

This chapter has described the research methods, including the qualitative approach, the constructivist paradigm (drawing too in participatory action research approaches) and the use of reflective learning. In describing data collection methods, the particular strategies used to elicit tacit knowledge have been described (such as story telling, the use of mindmaps and critical incident narrative), together with the more generally used qualitative methods of document review, observations and interviews. The iterative nature of data collection and analysis has been explored, showing how the facility managers participated in the co-production of knowledge throughout phase one and two. The process of constructing case reports is explained, leading to a meta-analysis of findings across the three cases. Attention to process and reflexivity have emerged as important strategies in strengthening the rigour of this research. Finally, beyond the procedural ethics followed, the responses to a set of 10 ethics dilemmas, which emerged during the research process, have been described.

The next chapter is the first of five chapters dealing with the findings of this research. It explores the context of the three cases.



# Chapter 5. Findings: Understanding the Context

## 5.1 Introduction

This chapter explores the context in which the primary healthcare facility managers worked i.e., the context in which they engaged in decision processes and made decisions. It does not aim to be exhaustive in describing the history and development of the policy environment, and all the structures and procedures in the research setting. Instead Chapter 5 describes the context as it emerged in the empirical work, and as it is relevant to the three cases. The intention is to describe and enable an analysis of the contextual influences in each case, as they affected the decisions that facility managers made, and the way in which information was being used.

The context of the decision processes and decisions studied in this research is understood to be a set of nested influences:

- the national public sector policy environment,
- the national health sector policy environment,
- the response to this national policy at provincial, district and sub-district level,
- the facility context.

## 5.2 National public sector policy environment: efficiency, accountability and planning

In this case study, a set of contextual influences emerged from the national public sector policy environment, set by the Department of Public Service Administration and the National Treasury. In essence, these related to the promotion of improved service delivery and responsiveness to the public's needs, through strengthening efficiency and accountability in the public service sector, underpinned by rational planning approaches.

*The White Paper on the Transformation of the Public Service* (Department of Public Service Administration, 1995, p13) seeks to restructure and rationalise the public service sector, and

to improve management practice. It recognises that this would “require a major shift in management styles, *attitudes* and skills, away from the previous emphasis on directing and controlling and towards a new emphasis on communicating, consulting, supporting, motivating and delegating”. It has been complemented by *The White Paper for the Transformation of Service Delivery* (Department of Public Service and Administration, 1997) which sees increased accountability and efficiency as essential to improving public service delivery and which introduces the notion that the people must come first - the concept of the *citizen as a ‘customer’*. The responsibility has been given to national and provincial departments to introduce eight principles, the Batho Pele<sup>23</sup> principles, which signal a changed relationship between government departments and citizens, recognising citizens’ right to, among others, be treated with courtesy and consideration, have more consultation and communication about the public services they receive, and have equal access to the services. The paper also gives citizens the right to redress, through a sympathetic complaint system, if the promised standard of service is not delivered.

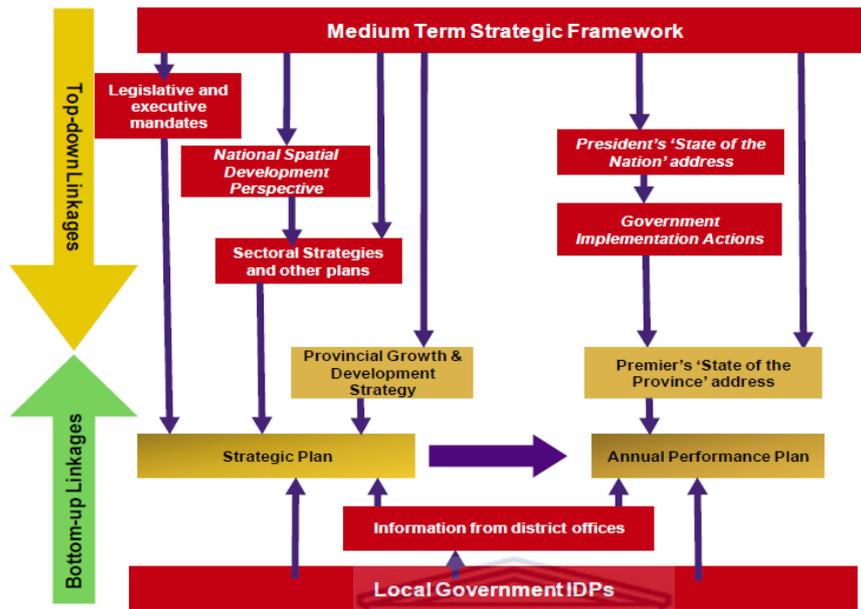
The Public Finance Management Act of 1999 (National Government of South Africa, 1999) provides the legal structures and processes for financial management and accountability in the national and provincial governments, for budgeting, reporting and auditing. The Public Audit Act of 2004 further empowers the Auditor General of South Africa to conduct an audit of performance information. The Framework for Strategic Plans and Annual Performance Plans (National Treasury, 2010b) provides for a strong, coordinated approach to rational planning in all government departments. As shown in Figure 5.1, the intention is to have both top-down and bottom-up approaches to planning, with national departments giving strong direction in the former, and the latter being informed by, and responsive to local need. Planning processes are linked to budgetary processes and performance management. The current formulation of rational planning being promoted is a “results-based” management approach.

*Results based management is a life-cycle approach to management that integrates strategy, people, resources, processes and measurements to improve decision-making, transparency and accountability. The focus is on achieving outcomes, implementing*

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<sup>23</sup> Batho pele is Sotho for ‘people first’.

performance measurement, learning from experiences and adapting, and reporting on performance. (National Treasury, 2010b)



**Figure 5.1. Top-down and bottom-up approaches to planning**

Source: National Treasury (2010, p4)

The national policy and guidelines on planning are reviewed in Appendix 5. The Guide to the Outcomes Approach (Department of Performance Monitoring and Evaluation in the Presidency, 2010) introduces performance agreements as a management tool, whereby the President is able to direct the work of his ministers, allowing greater accountability. It outlines how performance agreements should be developed into 5 year Strategic Plans for each department (called National Service Delivery Agreements) and Annual Performance Plans. Both are outcomes-orientated, meaning that budgets are developed in relation to inputs, activities and outputs, towards achieving the specified outcomes and impacts (National Treasury, 2007). While the 5 year Strategic Plans are linked to the term of office of government, and set out the policy priorities and strategic outcomes-oriented goals, the Annual Performance Plans (APPs) are 3-year plans, linked to the budget cycle of government, and set out what the institution or department intends doing in the upcoming financial year and following two years, to implement its Strategic Plan. Targets, to express a “specified level of performance that the institution, programme or individual is aiming to achieve within a given time” (Department of Performance Monitoring and Evaluation in the

Presidency, 2010, p11), are required at all levels of strategic and operational planning, and the progress towards meeting these targets has to be carefully monitored.

Monitoring and evaluation has been strategically strengthened with the establishment of the Department of Monitoring and Evaluation (M&E) in the Presidency in January 2010, and by the development of a suite of policy frameworks from 2005 to 2011. The Policy Framework for the Government-wide Monitoring and Evaluation System (GWMES) (Department of Performance Monitoring and Evaluation in the Presidency, 2007a) describes a three-pronged approach to monitoring and evaluation across all government departments, strengthening programme performance information; social, economic and demographic statistics; and evaluation. Each of these approaches is supported by its own policy framework, as shown in Appendix 6. The Framework for Managing Programme Performance Information (National Treasury, 2007) is particularly important in aligning the approach to monitoring, to support the national approach to planning and budgeting. The availability of reliable performance information is seen as essential for this results-based management approach. This framework describes performance information as a management tool for effective planning, budgeting, implementation, monitoring and reporting. Performance information is seen as essential to enhancing accountability in planning and service delivery, in relation to government spending. The accountability documents for local government (municipalities) are different from those required by national and provincial departments (e.g., while municipalities have Integrated Development Plans [IDPs], national and provincial departments have strategic plans); however, the type of performance information required within the documents is the same, as shown in Appendix 7.

A significant international driver that has shaped government priorities and required increased planning, accountability and monitoring, was the setting of MDGs. Plans to achieve the eight goals have been embedded in the National Development Plan of South Africa, the Provincial Growth and Development Plans and the Integrated Development Plans (IDPs) of municipalities (South African National Coordinating Committee for the Millennium Development Goals, 2013). Goals 4, 5 and 6 (to improve child mortality, improve maternal health and to combat HIV/AIDS, malaria and other diseases) informed the development of the Department of Health's 5 year Strategic Plan (Department of Health, 2010b) and were

translated into the four strategic outputs that the health sector sought to achieve; output 4 was seen as necessary to achieve the other three:

- Output 1: Increasing Life Expectancy
- Output 2: Decreasing Maternal and Child mortality
- Output 3: Combating HIV and AIDS and decreasing the burden of diseases from Tuberculosis
- Output 4: Strengthening Health System Effectiveness

In the Western Cape Department of Health's plan for 2020, it refers to the MDGs as part of the "compelling case for change" (Western Cape Department of Health, 2011, p9).

### **5.3 National health sector policy context: decentralised, responsive management**

This section describes the District Health System and Primary Health Care (PHC) approach adopted within the Health Act, as well as the approaches to planning and quality improvement espoused in policy documents. It also gives an overview of the development of the national health information system and the human resources for health plan.

#### **5.3.1 District Health System and the Primary Health Care approach**

In this case study, the history of promoting a PHC approach and a District Health System (DHS), and the setbacks experienced in implementation, formed an important part of the context. The Constitution (National Government of South Africa, 1996) creates three spheres of government - national, provincial and local government - and makes healthcare a responsibility of all three spheres. The National Health Act (National Government of South Africa, 2005) sets out the principles of cooperative governance across the three spheres, and adopts a PHC approach to transform the health system, using a district health system model. The policy intention is to establish "a health system based on decentralised management; principles of equity, efficiency and sound governance; internationally recognised standards of research; and a spirit of enquiry and advocacy which encourages participation" (National

Government of South Africa, 2005, p4). The definition of a health district that has been adopted is based on the WHO description (Tarimo & Fowkes, 1989) and is stated to be:

*The country will be divided into geographically coherent, functional health districts. In each health district, a team will be responsible for the planning and management of all local health services for a defined population. The team will arrange for the delivery of a comprehensive package of PHC and district hospital services within national and provincial policies and guidelines.* (Department of Health, 1997, unnumbered, found on the 16<sup>th</sup> page)

Further principles within The Health Act of 2003 which are aligned with the PHC approach and which are to be enabled by the DHS are: equity; access to services; comprehensive services; local accountability; community participation; and a developmental and intersectoral approach (National Government of South Africa, 2005).

Despite impressive policy advances in the first decade of democracy, population health outcomes decreased during this period (Naledi, Barron, & Schneider, 2011). This has been ascribed to a delayed response to the escalating HIV epidemic, and also a disconnect between the formulation of national policy and its implementation (Naledi et al., 2011), particularly in the development of the DHS, and in spending decisions at provincial and local government level (Development Bank of South Africa, 2008). The new Roadmap for Reform recommends a more decentralised operational management with increased accountability structures and mechanisms that “systemically impact on leadership and performance”(Development Bank of South Africa, 2008, pvi). Improving management becomes a key focus in the new Health Minister’s 10 Point Plan for 2010 -2014 (Department of Health, 2010a) and the subsequent Negotiated Service Delivery Agreement (Department of Health, 2010b) with “strengthening health system effectiveness” as a separate strategic output to enable the achievement of the MDG-inspired health outcomes. The aspects of health system effectiveness that need strengthening are conceptualised as: revitalisation of PHC; healthcare financing and management; human resources for health; quality of health and the accreditation of health establishments; health infrastructure; and information, communication and technology and health information systems. A recommitment to the PHC approach has led to the formulation of the Department of Health’s PHC Re-engineering Strategy which reconceptualises how primary healthcare services could be delivered in the community and at

district level through a population-orientated healthcare approach, and a strengthened DHS (Naledi et al., 2011).

### 5.3.2 Approaches to planning and quality improvement

The Department of Health has supported the government-wide approach to planning and has issued the Framework for the Development and Quarterly Monitoring of the Annual Performance Plans (APPs) and the Operational Plans of the Department of Health (Department of Health, 2012a). It has committed itself to the implementation of performance management as a measure to improve performance and accountability:

*The Office of the Director-General shall ensure systematic linkages between the performance of the Department as an organisation, and the performance of individual members of Senior Management Services (SMS). Targets set by each Branch of the National DoH for the first year of the Annual Performance Plan shall constitute the basis of the Performance Management Agreements (PMAs) of the Deputy Director General responsible for the Branch.* (Department of Health, 2012a, p10)

Managing the quality of care is another strong managerial focus in the reform of health service delivery, building on the Batho Pele principles in The White Paper for the Transformation of Service Delivery (Department of Public Service and Administration, 1997). A Policy on Quality in Health Care for South Africa (Department of Health, 2007) has sought to create an environment conducive to quality healthcare and to building the capacity to improve quality. This has been done through fostering evidence-based practice and innovation by: adapting organisations for change; engaging the healthcare workforce to determine how to improve the way in which work is done; providing appropriate training and professional development; and investing in information systems that measure quality improvement. Furthermore it has set out a suite of strategies, as shown in Box 5.1, to monitor the standard of quality of care.

The National Health Act of 2003 (National Government of South Africa, 2005) creates an Office of Standards Compliance as well as a Provincial Inspectorate of Health Establishments. The Office of Standards Compliance “establishes a benchmark against which health establishments can be assessed, gaps identified and strengths appraised; and provides

for the national certification of compliance of health establishments with mandatory standards” (Department of Health, 2011b). One of the fast track priorities for quality improvement is patient rights, which includes acceptable staff attitudes and client waiting times. Each standard has a set of measurable criteria, which reveals the underlying intention to generate rational, objective evidence of performance. The measures are:

*the means or evidence for determining whether or not the criterion has been met. They examine direct observables, i.e., aspects that can be seen, heard or felt by the assessors; and indirect observables such as analysis of policies, minutes of committees and patient record reviews, which, while they may not entirely demonstrate that a criterion is met, give reasonable assurance that it is.*

(Department of Health, 2011b, p13).

### **Box 5.1. Strategies to monitor the standard of quality of care**

Monitoring through the users of the service, by way of

- A National Complaints Procedure
- A Patient Satisfaction Survey

Monitoring through structures of governance, being

- The Office of Standards Compliance
- The Provincial Inspectorate for Health Establishments
- Hospital Boards and Clinic Committees

Monitoring through the providers, by way of

- A staff satisfaction survey
- Clinical audit
- Supervisory visits
- Facility-based quality teams

Monitoring through professional bodies

- Quality monitoring by professional bodies

Health establishments have been required to do an initial self-assessment, as a baseline for developing quality improvement plans, which has been followed by an external audit conducted by an independent body, to assess the degree of compliance and to issue an audit report. Complementing this carefully measured approach is the National Complaints’ Procedure which, since its first release in April 2003, has been a focus of continuous national attention and has been revised three times (in 2006, 2009 and 2013) through processes of

consultation with provincial officials and professional councils (Quality Assurance Directorate, Department of Health, 2013). It seeks to standardise the processes for managing complaints and is overseen by the Office of Standards Compliance. The establishment of a Presidential Hotline for complainants, who feel that they have not been heard through a fair process at other levels, demonstrates the national commitment to ensuring the implementation of processes for managing complaints and improving quality of services rendered.

### 5.3.3 Development of a national health information system

The development of a national health information system has been a priority in transforming the health system post-apartheid and began in 1995, with a research and development project (Braa & Hedberg, 2002). The Health Information System Pilot Programme (HISPP) was a partnership between the Department of Health, the University of the Western Cape, the University of Cape Town and the University of Oslo (Norway). In line with the philosophy of the newly-introduced PHC approach, HISPP took an innovative stance by supporting local use of health information to improve responsiveness to the community, thus countering the expectation that data was collected for *upward reporting*<sup>24</sup> (Braa & Hedberg, 2002). Mitchells Plain<sup>25</sup> was selected as one of the three sub-districts in Cape Town to participate. Local managers and staff were involved in defining a standard minimum dataset to be collected by all facilities and health services, and to develop information strategies and processes to support the emerging DHS. HISPP also developed Open Source software, called the District Health Information System (DHIS), which was adopted by the Department of Health in 1999 and rolled out to all districts in the country in Phase II of the process (1999-2001).

Despite this early success, serious threats to the sustainability of the DHIS were soon apparent (Williamson & Stoops, 2001), including weak support from top and middle management, insufficient allocation of human and financial resources to the fledgling system,

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<sup>24</sup> This refers to the practice of collecting data to be reported up the system for use at higher levels of the health system.

<sup>25</sup> Mitchells Plain Sub-district boundaries have subsequently changed, with the new boundaries excluding the suburb of Strandfontein but now including half of the old Nyanga sub-district (made of the greater Browns Farm, Phillippi, Weltevreden Valley, Crossroads areas).

delayed implementation of the district health system and poor use of information for decision making.

*The optimistic suggestion that implementation of an action-led district information system will itself support district development and promote Primary Health Care awareness by establishing a culture of local analysis and use of information in order to identify and follow progress towards local targets within a Primary Health Care approach has had limited success. Reality has indicated that managers seldom seek information and once given it, are at a loss as to how to deal with it. Thus training also needs to include support for managers who need to use the information.*

(Williamson & Stoops, 2001, p113)

A National Health Information Systems project ran from 2005 to 2007 to provide technical assistance and support to the national and provincial departments of health to strengthen the use of health and management information systems, with a focus on the District Health Information System (English et al., 2011). The weaknesses uncovered by this project led to a full national HIS assessment in 2009 (Enhancing Strategic Information Project, 2011), which recommended strengthening human resource capacity, infrastructure and management of the HIS.



The District Health Management Information System Policy (Department of Health, 2011a) was issued in 2011 to enhance the management of health service record information<sup>26</sup>. The District Health Management Information System Policy's definition of a district HMIS is "a system for deriving a combination of health statistics from various sources, mainly from routine information system used in the public sector to track health service delivery in sub-districts, districts, provinces and nationally" (Department of Health, 2011a, p9)<sup>27</sup>. The current DHMIS does not currently include information on district health resources, although the policy states an intention to create an interface with the basic accounting system which manages financial transactions (National Treasury, 2010b). The DHMIS is seen as a

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<sup>26</sup> This policy uses terms differently from the definitions adopted in this research - see the terms adopted in section 4.6.

<sup>27</sup> In the terminology adopted by this research this is understood to be the system that collects data from health service records, as defined by Health Metrics Network (2008b), and to be synonymous with a district RHIS.

component of a comprehensive national HMIS<sup>28</sup>. The other components of a comprehensive national HMIS are understood in the DHMIS policy to include: population-based information; health resource records; vital registration data; and government-wide support systems; this full national HMIS is still under development. The broader context for the DHMIS policy is the national Framework for Managing Programme Performance Information (National Treasury, 2007), which provides the framework for designing good performance indicators, developing capacity to manage, use, and publish performance information, and locating the role of performance information in planning, budgeting, and reporting.

The DHMIS policy defines in detail the requirements and expectations of users of the DHMIS at all levels of the health system, from national through to provincial, district and sub-district and ultimately to the health establishments, where the information is collected. It focuses on seven areas which it identifies as high level priorities: health information coordination and leadership; indicators; data management; data security; data analysis and information products; data dissemination and use and health information system resources. In doing so, it addresses a number of key weaknesses identified in the 2009 assessment of the South African RHIS (English et al., 2011). It gives overall ownership of the district HMIS to the national director-general, the provincial heads of department and the district managers. It requires that the DHMIS be adequately resourced financially and with sufficient trained staff, equipment and upgraded Information and Communication Technology (ICT). It has been instrumental in strengthening the RHIS.

The national implementation of the DHMIS policy has meant that indicators have had to be rationalised, data management processes standardised and the quality of the data monitored. It has promoted the active use of data at all levels, by requiring quarterly and informal monthly feedback to lower levels. A National Health Information Systems Committee of South Africa (NHISSA) has been established as a sub-committee of the Technical Advisory Committee of the National Health Council. Members have been drawn from the national and provincial Departments of Health who are responsible for health information, monitoring and evaluation, epidemiology, district health systems and primary healthcare services. This

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<sup>28</sup> In the terminology adopted by this research this is understood to be the total HIS, incorporating both population-based and institution-based sources, as defined by Health Metrics Network (2008b).

committee has developed a number of policies and procedures to standardise data management and is tasked with overseeing revisions to key data-sets, and the ongoing software development required for the HIS.

### **5.3.4 Human resources for health**

The development of human resources for health has been a national priority in the Department of Health, appearing in the Minister of Health's 10 Point Plan (Department of Health, 2010a) and the National Service Delivery Agreement (Department of Health, 2010b). The Department of Health released the Human Resources for Health South Africa: HRH Strategy for the Health Sector: 2012/13 - 2016/17 in October 2011: it recognises "(t)he complexity and challenges of managing human resources in the work environment" (Department of Health, 2012b, p61) and the need to strengthen this environment, so that staff feel valued, as a lever to improved good care and good health outcomes:

*The key role of the leadership of the health sector at all levels is to ensure a health care environment where the health workforce is valued and supported and has the opportunity to develop while providing high quality care. A set of interrelated issues such as job design, performance management, remuneration, employment relationships, physical work environment and equipment, workplace cultures and human resource practices, facility workforce planning and career pathing, affect the motivation and abilities of health care professionals. The future of Human Resources for Health and the quality of the health care system will be determined by how well the system is led and managed at all levels, especially at the level of facilities which enable an optimal environment for patient care. (Department of Health, 2012b, p57)*

One of the objectives of the HRH Strategy for the Health Sector is to decentralise more human resources management (HRM) functions to district and facility level and, to support this, to define the human resources (HR) roles, responsibilities and competences of the line managers. This has already been implemented at district level in some provinces, such as the Western Cape. The HRH Strategy for the Health Sector argues that line managers have to take on the HR management of staff, and defines the role of the HR department as a supportive and advisory one:

*The broader organisational strategy of any organisation predetermines the HR strategy. The HR strategy, in turn, predetermines the strategy of the HR department. These distinctions are important: the HR strategy cannot succeed if it is left to the HR department to implement. This is because, increasingly, in global Best Practice organisations, the central role in the management of the organisation's HR has to be played by line managers. The role of the HR department is to act as a professional, internal consultant and to support line management in their HR responsibilities.*

(Department of Health 2012b, p112)

There is, however, concern that the HR information is inaccurate and is reported in a way that is not useful for management purposes. A medium term strategy in the HRH Strategy for the Health Sector is thus to improve the HR information systems, so that it can monitor efficiencies and use of personnel.

#### **5.4 Western Cape Provincial Government's vision and approach to management**



The Western Cape Provincial Government is committed to the development of an integrated district health system. In 1995, the newly-elected Provincial Cabinet approved the New Provincial Health Plan based on the PHC approach delivered through a DHS. However a number of issues delayed the implementation of the DHS (Barron, 2008) including: the demarcation of local government boundaries; legislation to support the governance of the DHS; a definition of a common service package for primary healthcare services; and the existence of both local and provincial government primary healthcare services. While the five rural districts were restructured under a single provincial administration, there were a number of obstacles to restructuring districts within Cape Town, arising out of misaligned political processes, and the financial and human resource implications, given the large staff numbers that would need to be transferred (Barron, 2008). Therefore, to date (2015), parallel local government and provincial district management structures remain which manage separate primary healthcare services in the overlapping geographical areas.

Unlike a number of other provinces, the Western Cape Department of Health has many longstanding and experienced managers in operational management and policy development (Western Cape Department of Health, 2009). Through periods of massive restructuring, this has introduced some stability in the form of institutional memory and commitment to the longer-term agenda of transforming service delivery and improving outcomes. Strong planning and policy capabilities, and the ability to reflect and build on the lessons learnt in the process of implementation, are evident in the set of guiding plans to transform the health services in the province. The Comprehensive Service Plan 2010 (Western Cape Department of Health, 2007) set about restructuring the health service to address the inefficiencies arising from clients being seen at inappropriate levels of care. Health Care 2020 (Western Cape Department of Health, 2011) recognises the importance of flexible planning, setting strategic direction rather than planning the fine details of implementation. It supports the development of a number of strategies and tools to improve the planning of health service provision, including: revised HR establishments; instruments to control expenditure and manage the filling of staff posts; clinical governance policy and processes. Health Care 2030 (Western Cape Department of Health, 2013), the current document guiding a “re-visioning” of health service delivery, has been developed with thorough staff consultation and sees the patient-centred approach as “the crux of a re-imagined future” (Western Cape Department of Health, 2013, pg x). The patient-centred approach is understood to consist both of an improved patient experience of the health services, and of improved patient health outcomes. Health Care 2030 draws on principles of good governance, which include being responsive and accountable. There is also an increased emphasis on improved information management with a “culture of information use” which is seen as vital to the success of the province’s strategic vision (Western Cape Department of Health, 2013).

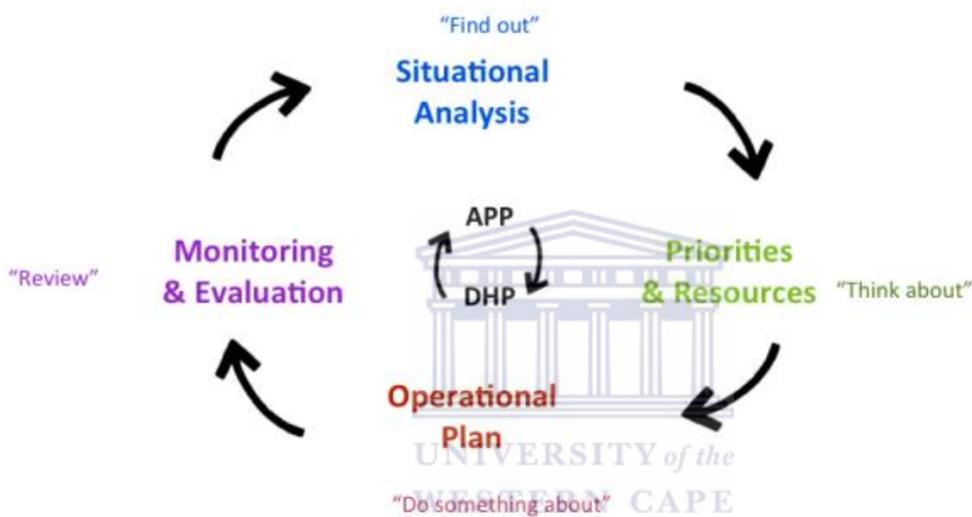
The Western Cape Department of Health’s vision is “Quality Health for All” and it sets out six core values: caring, competence, accountability, integrity, responsiveness and respect (Western Cape Department of Health, 2013). It has engaged in a number of projects within a wider change management process to begin fostering these values among managers and staff alike. In this, it is consciously working against a set of values which have been identified, in a Barrett’s survey conducted in 2009, as limiting the desired caring values: cost consciousness, bureaucracy, hierarchy, and confusing messages (Western Cape Department of Health, 2013).

In line with its vision, the Western Cape Department of Health has made continuous improvement of quality of care a provincial priority. It has developed its own framework, built on the Batho Pele principles and complying with the National Core Standards, to support its vision of a patient-centred experience (Western Cape Department of Health, 2013). This framework has three inter-related and inter-dependent dimensions: individual, health system and population. In the individual dimension, attention has been given to the direct experience that the patient has of the health service; it requires processes to be put in place to ensure that there is clinical governance, continuity of care, a positive staff experience and that the patient's voice is heard. The health system dimension is concerned with building a culture of continuous quality improvement in managing service coverage, efficiency and compliance with national core standards. The population dimension draws attention to population-based planning, taking into consideration the local burden of disease profiles to improve population health outcomes. Each of these dimensions is supported by a set of processes and procedures, many of which have already been instituted, such as client and staff satisfaction surveys and complaint procedures.

Within the Western Cape Department of Health, rational planning approaches are promoted to improve health outcomes and accountability. The District Management Accountability Framework (DMAF) (Cupido et al., n.d.) is a provincial innovation which has been actively used to mould the approach to district health management. It sees the district managers' core function as *driving* population health improvement through a two-fold approach, making use of "rational planning – as epitomized by the planning cycle and the DMAF" and "strengthening and supporting decentralised management capacity" (Cupido et al., n.d., p7). The version of the planning cycle promoted is shown in Figure 5.2.

Within the context of rational planning, the DMAF is promoting the use of formal information and holds the district manager accountable for their district's data generated in the HIS:

*Good quality information is crucial. It is crucial both for performing an accurate situational assessment but also, in the monitoring and evaluation phase, it must be sensitive enough to detect any changes that an operational plan might bring about. In other words, it is needed to either confirm that the existing plan is working (and must be continued) or that it is not working and alternatives need to be sought. It is only through the persistent and practical use of data that its quality will improve. The DM is ultimately accountable for the data that is generated in their district. (Cupido et al., n.d., p 27)*



**Figure 5.2. The rational planning cycle**

Source: Cupido et al., (n.d., p27)

## 5.5 District and sub-district context of management

This section describes the development of the district health system in Cape Town and the sub-district management structures in City Health and MDHS. It then describes the planning processes, the cascade of meetings which enable management across levels of the health system, the processes of performance management and supervision, the provision of technical support to the programmes delivered within facilities, and the health information system. The section ends with an overview of the recent changes in human resource management policy

and procedures, which describes the human resource management responsibilities that have been devolved to facility managers.

### **5.5.1 Development of the district health system in Cape Town**

The Cape Town Metropolitan District is one of the districts in South Africa which has not yet fully implemented the DHS, despite seconding and developing the capacity of interim district health management teams since 1997. Historically both provincial and local government authorities have provided primary level healthcare services. This is a remnant of the fragmentation introduced during the apartheid years. With the reorganisation of the services post-1994 to reduce racially-based service delivery, the management of primary level healthcare services in Cape Town was, as has been indicated above, decentralised to two organisations administered by local and provincial government respectively - City Health and the MDHS. These organisations provide healthcare services in the same geographical areas. To date (2015), negotiations on the transfer of authority, staff and finances have not been resolved, leaving two parallel management structures. At the time of this research, City Health received funding from MDHS for some of the services it rendered, and this was formalised within a Service Level Agreement (SLA)<sup>29</sup> of primary level services (City of Cape Town, 2013).

As described in the description of the study setting given in section 1.7.2, Cape Town Metropolitan District is divided into smaller administrative areas which form the basis of the DHS. Within the district the MDHS has divided its management into four local “substructures” whilst City Health has divided its management of the same geographical area into eight sub-districts - two of which together coincide with the boundaries of each of the four MDHS substructures. Each City Health sub-district has a population approximating 400 000 and, although this is more or less double the size of the WHO-defined concept of a district (Tarimo & Fowkes, 1989), they function as the primary administrative units for managing and coordinating health services, community involvement and intersectoral actions for health. The MDHS substructures have a similar role, but cover a larger population of

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<sup>29</sup> The SLA is a contractual mechanism which structures organisational relations.

around 800 000. Both the City Health sub-districts and the MDHS substructures report to an organisational management team situated at the district level.

### 5.5.2 Current structure of the sub-district and substructure<sup>30</sup>

The City Health sub-districts were introduced in 1999. Sub-district managers were appointed in contract positions from 1999 to 2005. Prior to 1999, facilities were managed by senior professional nurses who had both administrative and clinical responsibilities. In 1999 their designation was changed to that of facility manager, and this became a full time position which meant that they were supposed to relinquish their clinical responsibilities. In 2005 the sub-district boundaries were redrawn and formalised to integrate areas which had been divided by race. This coincided with the full time appointment of sub-district managers to head the operational management of primary healthcare and environmental health services in each of the eight sub-district offices. A *facility manager supervisor*<sup>31</sup> was appointed in each sub-district with line function management responsibilities for the facility managers in their sub-district, and to provide technical support to programmes delivered in their sub-district. Some functions such as finance and procurement were partially devolved from City Health, with the appointment of a level 3 administrative officer, with some clerical support, to the sub-district offices. Human resource management remained more centralised, with sub-districts only receiving clerical support for data capture and to facilitate HR processes. A health information officer was appointed to support facility managers and to collate health information at sub-district level. These staff formed the core of the sub-district management team, together with a sub-district medical officer, a HAST coordinator and a principal environmental health officer; this team met monthly. While facility managers reported to the facility manager supervisor in terms of line management, they were directly managed by the

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<sup>30</sup> From this section onwards, the context will be described largely in past tense as it describes the *local* (sub-district/substructure) context which is the immediate context to the three cases in this research. Also it is concerned with *practices* at the time of this research, and *events* which are better described in past tense, as is usual in research. It does not imply that these events have changed at the time of completing this thesis (late 2015). This is in contrast to the description and analysis of the national policy environment, and the more enduring provisional vision and approach to management, described earlier in this chapter, which have been largely described in present or past continuous tense.

<sup>31</sup> In City Health, the official designation *Personal PHC and Programme Manager* was used, but in this research *facility manager supervisor* is used as a generic descriptor for this functionary in both City Health and MDHS.

sub-district manager who called a monthly *facility managers meeting*<sup>32</sup> with them and the facility manager supervisor.

The MDHS structure evolved over a longer period and was only formalised in 2007, with the appointment of the four substructure directors. The Klipfontein-Mitchells Plain Substructure team initially operated from the central MDHS head office in Woodstock, Cape Town and from the programme support hub in Bellville, Cape Town and only moved to the newly constructed substructure offices in July 2010. It was only with this move that a substructure identity emerged in the team (interview notes, 22 February 2012). A facility manager supervisor<sup>33</sup> was appointed at deputy director level as line manager to the facility managers. The authority to manage the key elements of health system support was delegated to substructure level, with the appointment of deputy directors (and full staff complements) for HR, finance and supply chain management, programme support (called Comprehensive Health Services) and pharmaceutical services. In 2013, a manager for health information was appointed and joined the Klipfontein-Mitchells Plain Executive Management team which met on a monthly basis. The facility manager supervisor was the line manager of the eight facility managers, and provided them with supervisory support, which included a monthly supervisory visit and a monthly facility managers meeting<sup>34</sup>. The deputy director for programmes was responsible for coordinating and managing the technical support for programmes run in community settings and in the eight primary healthcare facilities. The deputy director for pharmacy managed the pharmacy services, but the pharmacists in the facilities reported directly to their facility managers. The decentralised nature of finance, supply chain and human resource management in MDHS contrasted with City Health, where these functions were still more centrally administered, with only a few support function staff

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<sup>32</sup> In City Health this meeting is called the *Clinic Managers Communication Meeting*, but in this research *facility managers meeting* is used as a generic descriptor for the meeting in both City Health and MDHS

<sup>33</sup> In MDHS the official designation *Deputy Director PHC* was used, but in this research *facility manager supervisor* is used as a generic descriptor for this functionary in both City Health and MDHS.

<sup>34</sup> In MDHS this meeting is called the *Facility Managers Forum Meeting*, but in this research *facility managers meeting* is used as a generic descriptor for the meeting in both City Health and MDHS.

members at the sub-district office. Senior staff were selected to work as dedicated facility managers in the mid 2000s but these appointments were only formalised in 2013/14<sup>35</sup>.

In Cape Town, there was strong district and sub-district/substructure leadership in both organisations (Western Cape Department of Health, 2009), who were familiar with systems thinking and the World Health Organization (WHO) Framework For Action to strengthen health systems (World Health Organization, 2007a). The district and sub-district/substructure management were committed to creating a supportive and enabling environment for facility managers. The two authorities met monthly and collaborated in sub-district planning and special projects. There was a relatively strong RHIS drawn from health service delivery records which generated timeous and usable information, with Mitchells Plain having benefitted from being one of the first of three pilot sites for the development of an integrated district HIS in 1998 (Braa & Hedberg, 2001).

For ease of reference in this research, a common nomenclature will be adopted from this point onward to refer to the same or similar level of managers, meetings and tools across the two organisations:

- The Sub-district Manager (City Health) and the Director (MDHS) will be called the *sub-district* and *substructure manager* respectively.
- The sub-district management team and the substructure executive will be called the *sub-district* and the *substructure management team* respectively.
- The monthly meeting of the sub-district management team and substructure executive will be called the *sub-district* and *substructure management meeting* respectively.
- *Sub-district* will be used as a common term when the sub-district or substructure level is discussed.
- The Personal PHC and Programme Manager (City Health) and the Deputy Director for Primary Health Care Services (MDHS) will both be called the *facility manager supervisor*.

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<sup>35</sup> Despite not being formalised at the time this research started, these staff functioned fully as facility managers, and participated in this research as such. They were also performance managed and supervised as facility managers.

- The monthly meetings that the Sub-district Manager (City Health) and the Deputy Director for Primary Health Care (MDHS) had with their facility managers will be called *the facility managers meeting*.
- The tool used by the City Health and MDHS facility manager supervisors during on-site supervisory visits to the facilities, will be called the *Supervisory Quality Assurance Tool*.

### 5.5.3 Planning processes

The key plans that guided the district and sub-district/substructure managers are shown in Table 5.1. Planning in MDHS was led by the Western Cape Department of Health. It was driven by the Provincial 5 year Strategic Plan and the Annual Performance Plan (APP). The district participated in this planning process and subsequent district level engagements were within pre-determined parameters, and were concerned with dividing targets between substructures. City Health planning processes likewise allowed little room for sub-districts to change targets. The City of Cape Town's Integrated Development Plan (IDP), mandated by the Municipal Systems Act and other legislation, provided the strategic framework guiding the city administration in planning, budgeting and resource allocation over the course of the political term. It identified key strategic areas of focus in order to achieve the City's vision which, for 2012 – 2017, was *the promotion of a safe, caring, inclusive and well-run city of opportunity*. The City Health Business Plan was derived from the IDP and was monitored by 32 indicators.

In 2010, there was an attempt in both organisations to actively involve the sub-district and substructure management and their facility managers in a more bottom-up approach to target setting, but this proved difficult to coordinate within the timelines available. In subsequent years through to 2014, the facility managers have only been involved in operational planning, which does not extend to resource allocation and target setting.

*There was no opportunity to talk about targets. The only thing we had to plan around was services, things that they want, new programmes that they want. It's like 'How are we going to implement, what can we do?' There was nothing about resources, targets, and things like that. It was just all the new ideas towards quality and all those things.* (Peer facility manager, MDHS workshop 3)

When it came here [the substructure] we were called in on a one-on-one and our targets was [sic] already set for us. None of us had input. (Peer facility manager, MDHS workshop 3)

**Table 5.1. Key plans guiding district and sub-district/substructure managers**

Governing authority	Document	Description	Time frame
Province	<i>Health Care 2030</i>	Strategic re-visioning of the delivery of health services.	Vision guiding the Department of Health (DoH) from 2013 to 2030
	<i>Strategic Plan</i>	A long term framework that guided annual planning and budget cycles.	2010/11-2014/15
	<i>Annual Performance Plan</i>	A plan that outlined initiatives to be implemented in one financial year and set budgeted targets to be achieved in one year.	Annual
City	<i>Integrated Development Plan</i>	Integrated plan for all local government services. Each portfolio prepared individual statutory plans incorporated into the IDP.	2007-2012 2012-2017
	<i>City Health Business Plans</i>	An annual plan for all health services under the City's authority.	Annual

Facility managers in both organisations reported that, although they did not understand how targets were developed, they were required to work towards these targets and defend these targets to their staff. Facility managers felt that some targets were not realistic, especially when they bore no relation to their facilities' prior performance, and that some were not contextually appropriate (e.g. targets for male medical circumcision in predominantly Muslim communities). They reported that they and their staff became demotivated when it seemed impossible to reach targets. District and sub-district/substructure managers expressed concern that there was not a "culture of information use" among facility managers (District Plan-Do-Review meeting, June 2012) and sought to promote use of the information from the HIS in facility level planning and monitoring.

In 2010 a community mapping exercise was undertaken in the sub-district/substructure by the broader DIALHS project in partnership with the sub-district/substructure management to support local identification of health priorities by engaging community stakeholders. A set of priorities were identified as local health priorities, but these were not reflected in the PDR

planning targets: illegal refuse dumping, the proliferation of shebeens<sup>36</sup>, rat infestation and dangerous road crossings.

#### **5.5.4 Management through meetings**

Management between the spheres of government was achieved through a series of well-established, similar, inter-connected meetings across a hierarchy of levels, as can be seen in Figure 5.3. Communication, coordination and joint planning between the two organisations was through joint meetings at district and sub-district level. Facility level staff meetings were also aligned with this process.

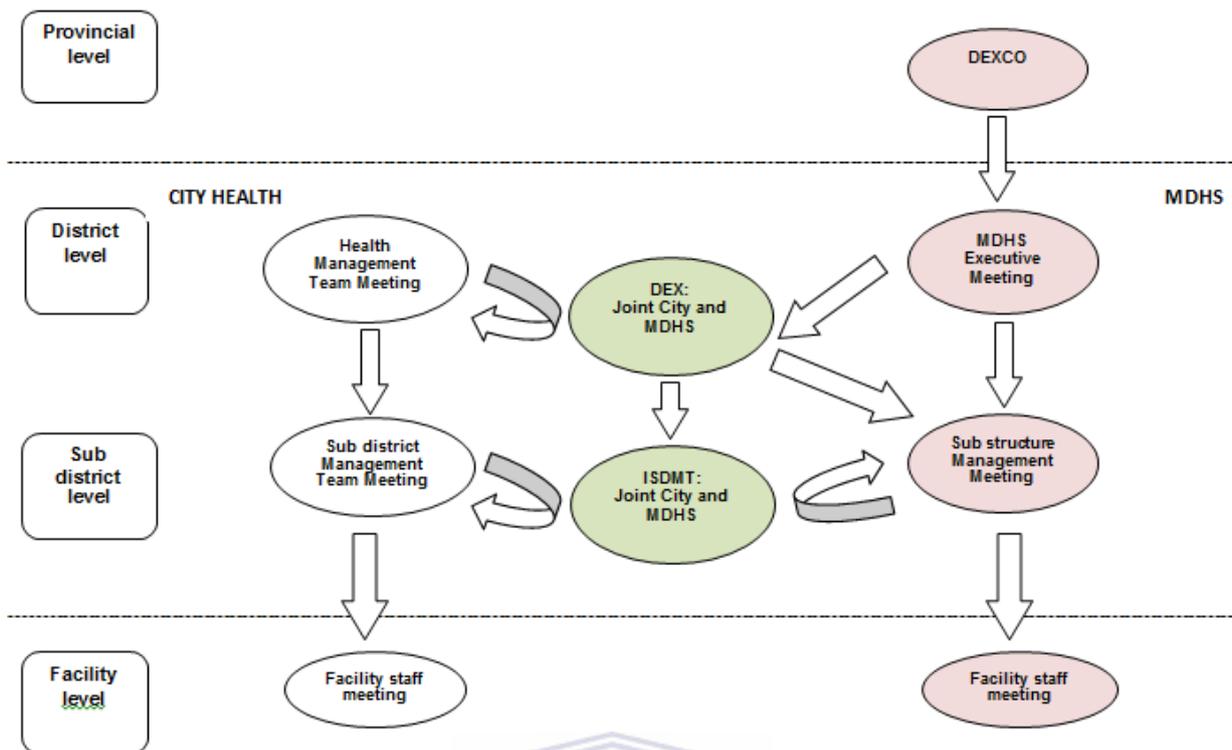
##### **Provincial and district management meetings**

The Divisional Executive Committee (DEXCO) was a provincial meeting chaired by the provincial deputy director-general for District Health Services and Programmes, which brought together the MDHS chief director, the four substructure managers and their deputy directors for Comprehensive Health Services, and the five rural district managers, and their deputy directors for Comprehensive Health Services. This meeting was responsible for planning and managing the district health services and programmes in the province.

At district level, City Health and MDHS had separate, as well as a joint, monthly management meeting. MDHS was directly accountable to province. Decisions taken at DEXCO were therefore binding for MDHS, which was mandated to implement these decisions. City Health was however required to discuss any policy change requiring additional funding with City of Cape Town, and to seek funding from MDHS for any additional mandate not already funded through their Service Level Agreement (SLA). Sub-district and substructure management meetings were tasked with implementing decisions taken at the district City Health and MDHS management meetings respectively.

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<sup>36</sup> Informal drinking taverns



**Figure 5.3. Management meetings within City Health and MDHS across the levels**

Legend: Arrows indicate the flow of communication and delegation; DEXCO: Divisional Executive Committee; DEX: District Executive Committee; MDHS: Metro District Health Services; ISDMT: Integrated Sub-district Management Team



Western Cape Department of Health, MDHS and City Health each had a quarterly monitoring and evaluation meeting called the Plan-Do-Review (PDR) Meeting, chaired by the organisation head (Head of Department, Health in Province; Chief Director in MDHS; and Executive Director in City Health). The main purpose of these meetings was to track progress towards meeting the targets set in the planning processes and to hold the managers to account at district and sub-district level. A subsidiary objective was to monitor and manage the quality of the data used in the targets.

### **Sub-district and facility management meetings**

At the time of this research, the sub-district level of City Health had a monthly sub-district management meeting of the district management team (DMT), consisting of the sub-district manager, the facility manager supervisor, project manager, the chief medical officer, the administration officer, the health information officer and the HAST coordinators. There was also a monthly facility managers meeting, chaired by the sub-district manager and attended

by the facility manager supervisor and the rest of the DMT. The purposes of the meeting were to give feedback on matters discussed at the City Health Management Team meeting, issues arising related to HR, HIS and finance, build management capacity through presentations on topics of interest (such as priority setting or time management) and to problem solve how to improve service delivery. During the time of this research, the sub-district manager introduced a new agenda item - “best practice” - to give facility managers the opportunity to share success and to speak of lessons learnt when implementing new interventions. At least two hours of this eight hour meeting were devoted to a review of the progress in meeting the PDR service delivery targets set for each facility.

In the MDHS, the substructure manager met on a monthly basis with her management team, but this did not include the facility managers. Instead the facility manager supervisor had a monthly management meeting with them; substructure support managers (the deputy directors for HR, finance and supply chain management, programme support and pharmaceutical services) and their staff were invited to timeslots within this facility managers meeting to engage with the facility managers as required. At quarterly intervals, the progress towards service delivery PDR targets was reviewed within the facility managers meeting.

In both organisations, the facility managers met with their facility staff on a monthly basis for a minuted staff meeting, using an agenda pre-set by the sub-district and substructure management. Adherence to this agenda was monitored by the facility manager supervisor through the use of the Supervisory Quality Assurance Tool.

### **5.5.5 Performance management**

In both organisations, the district targets were passed down the management ladder through a system of performance management, with targets being disaggregated from one level down to the next. In City Health, performance management extended from the executive director, City Health to the sub-district manager to the facility manager supervisor. There was a plan to extend the system of performance management formally to the facility managers and clinical staff in 2012/2013 but this was postponed. Instead facility managers were encouraged to develop their own performance plans in keeping with the City Health priorities. In MDHS, the formal performance management system extended right through the organisation from all

levels of managers down to frontline staff. The managers sat with their immediate subordinates and developed individual performance agreements which were then reviewed on a quarterly basis. If the individual was not meeting targets, then the contributing problems had to be identified and a plan of action developed. In MDHS, bonuses for individuals were made available for each facility and shared based on each individual's assessed performance.

### 5.5.6 Supervision

In City Health, supervision took place in a number of meetings: a monthly one-on-one meeting of each facility manager with the sub-district manager and the facility manager supervisor (this took place in the sub-district office), a monthly supervisory visit<sup>37</sup> of the facility manager supervisor to each facility when the Supervisory Quality Assurance Tool was used, and the monthly facility managers meeting. During the time of this research the sub-district management experimented with different ways of structuring the facility managers meeting, recognising that the meetings were not always effective in providing support to facility managers and were, at times, experienced as *checking up* and punitive. The facility managers requested that the meeting should allow for more problem solving and encourage sharing and discussion on the issues which they themselves placed on the agenda. Furthermore, facility managers requested a change to the supervisory visit, which they felt was dominated by the administration of the Supervisory Quality Assurance Tool and meant they did not have time to raise their own concerns. They requested more frequent supervisory visits and unstructured time in these visits.

In MDHS, supervision consisted of a monthly half-day visit by the facility manager supervisor to the facility, using a similar Supervisory Quality Assurance Tool that had been derived from the *Primary Health Care Supervision Manual* and complied with the standards set by the national core standards. This visit was recorded and entered into the HIS, and the

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<sup>37</sup> At the start of this research, the Quarterly Management Tool was submitted on a quarterly basis, and the PHC supervisor visited at least once monthly, completing sections of the tool and addressing other business arising. With the implementation of the national core standards, which required a monthly visit and documentation, the tool was split into sections that were covered in total every quarter. The content of the tool had to be aligned with the expectation of the core standards, but was more extensive.

*% facilities supervised* was recorded and reported every month. MDHS facility managers also found the quality assurance tool to be unwieldy and time-consuming, and to dominate the visit. The structure and nature of the monthly management meeting was being negotiated during the time of this research; the overriding experience was that these meetings did not create space for facility managers' concerns to be addressed. They were frequently cancelled because of other substructure priorities.

### **5.5.7 Technical support to programmes**

In City Health, some programme support was located at district level through a dedicated City-level HIV and TB Programme unit. Further, the eight sub-district facility manager supervisors worked as a team at City level to provide programme support: each was assigned a portfolio, determined by the priorities, on which they were the lead person for developing technical assistance and policy across the City. This assistance and policy was then implemented within the sub-districts by the local sub-district facility manager supervisor. In addition to the programme support provided by the facility manager supervisors, there were two HAST coordinators in each sub-district. These coordinators received technical support from the City HIV and TB Programme unit but came under the line management of the facility manager supervisor. They provided technical support to facility managers and their staff, identified training needs and oversaw the monitoring and evaluation of the HAST programmes. Further programme support at sub-district level was provided by specially appointed sub-district project teams, such as the Reproductive Health Project team, which was established in September 2012 to support increasing family planning coverage, especially in the under 18 year age group.

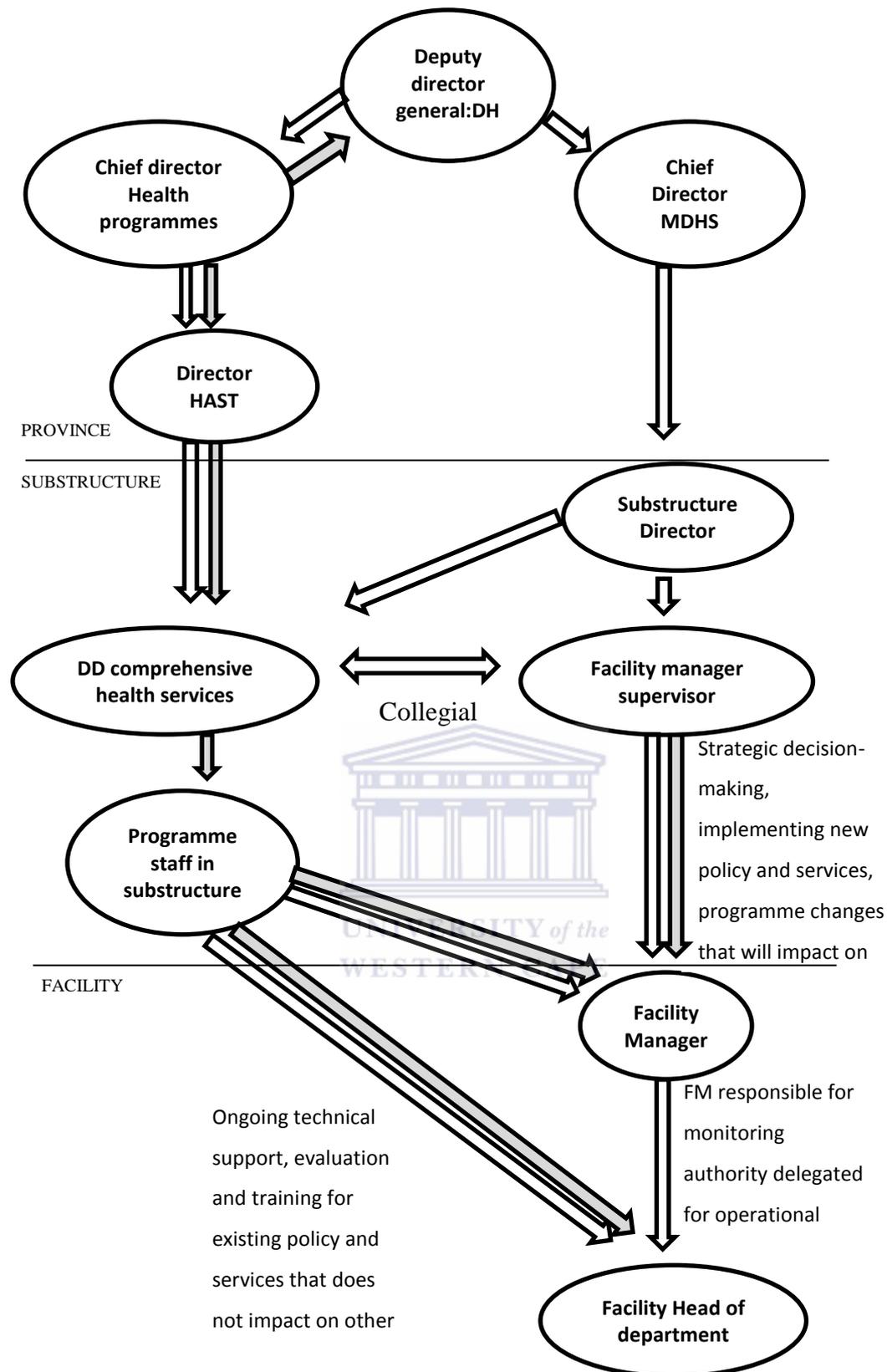
In MDHS, programme support was decentralised to the substructure with a deputy director for Comprehensive Health Services and assistant directors for facility-based services, community-based services and HIV/TB, each with a small staff complement of two to three staff; they liaised directly with the provincial programme directorates. In addition to providing technical support to facility managers and staff, they managed the contract performance of community based organisations that provided programmatic services in the community. They also functioned as a bridge between the facility and community-based services.

In MDHS, the nature of the relationship between the facility managers and the programme staff was being negotiated during the time of this research. There were examples of conflict: facility managers felt that their authority was not being recognised by programme staff. For example, in 2012, programme support staff planned to introduce TB services in the MDHS index facility without consulting the facility manager. They worked directly with the head of department (HOD) of the ART (anti-retroviral therapy) section to make plans for integration of ART/TB care in this section. While this was in line with a substructure decision, the facility manager felt she should have been involved in the planning, as she was responsible for managing the sustainability of all services, for managing the impact one service had on another and for general communication to all staff in the facility:

*That is wrong, because you know starting a program you need to have a buy in from everybody, otherwise it will fall flat ... It needs to be communicated properly and I communicate it to the staff members, so that (when a client) who comes here and says 'I'm coming for my TB treatment' the staff doesn't say, 'we don't give TB treatment here, go to (Facility X)' ... It's just that there are decisions that need to be taken that are important ... that I need to be part of. (Index facility manager D, interview 3)*

Changes were being made in how this relationship was conceptualised, and the provincial programme office lost its authority to instruct facility managers or their staff to implement policy changes. Instead they had to work through the operational line management (and the existing management meetings, described in Figure 5.3) in implementing new initiatives, as shown in Figure 5.4.

Within their facilities, facility managers were responsible for ensuring that a set of programmatic clinical governance audits were conducted regularly. In City Health, these were carried out by the facility manager herself, but in the MDHS facilities, these were led by the substructure family physician, who reported to the facility manager. These audits supplemented ad hoc observations of clinical practice, made when the facility managers were moving between service points. In diarrhoeal season, the substructure district family physician was responsible for a monthly diarrhoeal Morbidity and Mortality Review across both organisations, in a joint initiative to reduce diarrhoeal mortality.



Legend: Uni-directional white arrow – line management; uni-directional grey arrow – technical support; bi-directional white arrow- collegial co-operation

**Figure 5.4. Relationship between operational and programme support staff**

In both organisations large scale programme audits, such as the HIV/STI/TB Audit, were conducted annually and were coordinated by the sub-district/substructure, though often with the facility managers as members of the audit teams, either doing self or peer audits. Facility managers received their facility's results, presented in a series of graphs and tables, which allowed them to compare their facility's performance to other facilities, the sub-district average and to targets set by the district. First-level facility managers and, in larger facilities, their HODs, developed detailed action plans for their facility to address three of the main problems identified by the audit, and submitted these to the facility manager supervisor in the sub-district/substructure office. Facility managers were responsible for ensuring that these plans were implemented.

As shown in Box 5.2, programme priorities were supported at various levels in the district, through a variety of similar processes in the two organisations. The performance management and PDR processes which operated across levels have already been described in the section above. The Workplace Skills Plan (explained in section 5.5.9 to follow on Human Resources Management) aligned training with the service delivery priorities derived from the strategic planning processes described in section 5.5.3.

### **Box 5.2. Structures and processes that set and support priorities at various levels**

#### District level

- PDR process
- Programme support (City Health only)
- Training
- Performance management

#### Sub-district/substructure level

- Programme support in sub-district and substructure
- Training
- Project meeting (RH)
- Supervision
- PDR process
- Quality assurance
- Performance management

#### Facility level

- Clinical governance audits
- Performance management
- Deferment policy (City Health only)

## 5.5.8 Health information system

### Development of policy and procedures

The health information system within the district was supported by the development of provincial and district policy, aligned with the national policy directive and, at the time of this research, was orientated towards strengthening the RHIS. Provincial and district (in this instance City) level information task teams were set up to support the implementation of the DHMIS policy. One key focus was the reduction of the minimum dataset (MDS) to reduce the administrative load of collecting too many data elements. Many of the indicators were found to be redundant or duplicated; the rationalisation process was seen as a necessary pre-requisite for improving data quality. The task teams also supported the ongoing development and refinement of the data capture software (Patient Record and Health Management Information System [Prehmis] and Primary Health Care Information System [PHCIS] in City Health and province, respectively) and the report generating software (District Health Information System [DHIS] and Sinjani respectively). Provincial standard operating procedures for the RHIS were developed and revised. A sample of these is shown in Box 5.3 and a sample of current data management tools in Box 5.4.

#### Box 5.3. A sample of policies and procedures revised and implemented since 2012

- Data Flow Policy - H183 of 2012 - aims to describe the process of collecting, capturing, verifying, validating and submitting all routine data from facility level to the Department of Health.
- Routine Data Quality Policy - H184 of 2012 - aims to ensure sound information management governance through routine data quality monitoring of performance data.
- Compliance Monitoring Policy - H182 of 2012 - aims to provide management with a focused list of performance data, which needs to be monitored on a regular basis.
- Standard Operating Procedures for PHC, sub-district and district levels - H4 of 2013 - aims to provide standardised approaches to managing performance information at these levels.
- Routine monthly report - H65 of 2013 - aims to provide the official elements needed for monitoring in the Western Cape Province.
- Population statistics - H133 of 2013 - aims to provide population data for the Western Cape Province.
- Outpatient and inpatient related services forms - H59 of 2013 - aims to provide the official elements for data collection at hospitals and inpatient facilities.
- Folder management policies - H71 of 2013 - destruction of folders:
  - H78 of 2013 - removal of folders; H14 of 2014 - opening of folders.
- Provincial indicator set and data element change control process - Circular H133 of 2013 - aims to establish the process of changing indicators and elements for collection each year

Source: *Klipfontein Mitchells Plain Substructure Orientation Guide* (2013)

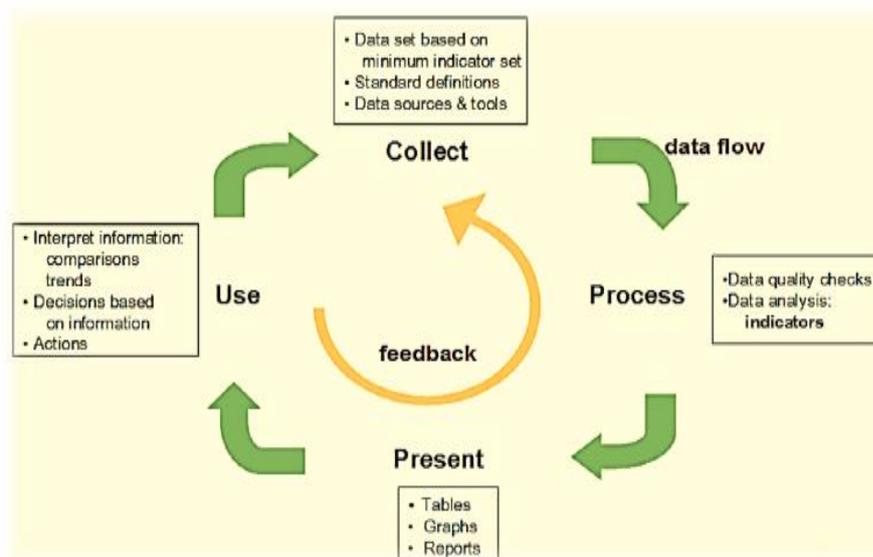
#### **Box 5.4. A sample of current data management tools and aides in use in 2013**

- Provincial indicator set
- Data definitions booklet
- Service point sheet/register
- Service point report (weekly and monthly)
- Patient and data flow map
- Reception headcount register
- Reception report (weekly and monthly)
- Programme-specific registers
- Routine monthly report
- Compliance monitoring instrument
- Data sign-off forms
- Data quality reports
- Support visit tools
- Sinjani user manual
- Information management reference file

Source: *Klipfontein Mitchells Plain Substructure Orientation Guide* (2013)

The implementation of the standard operating procedures (SOPs) and tools were a key management focus towards data quality improvement at quarterly City and MDHS PDR meetings, during the time of this research.

In both organisations, the concept of an information cycle, shown in Figure 5.5, was used actively at sub-district level to promote data quality improvement and the use of information from the RHIS. In City Health, it formed part of workshop series which all facility staff (facility manager to clinicians to clerks) were mandated to attend. In MDHS it was included in the orientation guide developed in 2013, to induct all newly appointed staff. This same concept had formed part of the health information system teaching since the late 1990s (Heywood & Rohde, n.d.) and was part of the current national teaching material (John Snow Inc., 2012) for health information management.



**Figure 5.5. Standard conceptualisation of the *Information Cycle***

Source: *Klipfontein Mitchells Plain Substructure Orientation Guide*, (2013, p 47)

### Scope of the health information system

The collection of routine health service delivery data had been the focus of sustained management attention in the Cape Town Metro District for more than a decade resulting in a well-developed, functional RHIS which produced information that was generally considered by provincial and district managers to be accurate enough to be used to inform local decision-making. Another data source that formed part of the HIS was vital registration data, which, in partnership with the Department of Home Affairs, was captured and analysed by the health information office at City Health, with support from the Medical Research Council. Census information on social determinants of health, updated every ten years, was available from City of Cape Town. Only census population data was housed within the district information system database. There was also a national annual antenatal HIV and syphilis survey. This information was held by the HAST programme staff in the district, rather than by the health information office. Periodic health service audits were organised and stored by district and sub-district programme staff or senior medical staff responsible for clinical governance. The health information office at district and sub-district level did not consider themselves to be custodians of this information. They focused almost exclusively on the information that was collected and stored by the district health information software (DHIS) which, at the time of

this research, housed routine health service delivery information and some annual audits such as the client satisfaction and staff satisfaction surveys.

Health resource information was collected separately from the RHIS in different software that lacked interoperability and which had not been through the same process of intensive development. The human resource and procurement information systems were noted to be weak, producing unreliable data that was often not good enough to use in management at facility level.

### **Organisational design**

In City Health, there was a head of health information and technology and a senior health information officer in the district-level City Health office who were responsible for supporting the development and implementation of the HIS in City Health facilities, providing technical support to the sub-district health information officers and preparing quarterly PDR reports for the City Health management team to monitor progress towards service delivery targets. The head of health information and technology also supervised a team of four health information clerks who captured all birth and death records for Cape Town. At sub-district level there was only one health information officer (HIO), situated in the sub-district office, who reported to the sub-district manager. The HIO was available to support facility managers when they ran into technical difficulties, using the software reporting functions, and helped train facility staff on any new software development or process. Significantly, in City Health, the HIO interacted directly with the facility managers, while in MDHS, the data management support was given to the data clerks. Data capture in the City Health facilities was done by reception clerks. This was only one of their responsibilities; they also staffed the reception desk, interacting with clients, drawing and opening client folders and managing the folder system.

In MDHS there had been a significant investment in resourcing the RHIS. At the time this research started in 2011 there was a deputy director for health information in the district office. In 2013 an assistant deputy director for health information post was created in each substructure, raising the priority given to, and the capacity to manage, the RHIS. The assistant deputy director provided technical support to the substructure management team.

Two health information officers worked in the substructure offices and were responsible for capturing the programme register data, and for providing training and support to the facility data clerks. Each 24 hour facility had three dedicated data clerks and each eight hour facility had two data clerks, who were responsible for capture and collation of the routine service delivery data (reported on in a standardised report call the RMR). There were additional data clerks employed through HIV programme funding to support the ART services.

At sub-district level, at the time of this research, the attention given to improving the quality of the reduced minimum dataset (MDS) within the RHIS meant that the work of the health information officers was strictly focused on the MDS; it therefore did not cover other aspects of data which are traditionally considered part of the HIS. The health information officers did not see themselves as custodians of health information generally, but of the smaller subset of RHI, and a few high priority monitoring activities (such as immunisation campaigns and diarrhoeal season projects), and did not offer support to facility managers in generating, interpreting or holding, for future retrieval, any information outside of this narrow focus.

### **Sub-district and facility RHIS data management processes**

The facility manager was delegated the responsibility of managing the data management processes in her facility, although some could be delegated to other staff. They are listed in Box 5.5. In the smaller City Health facilities, the facility manager supervised these processes, whereas in the MDHS facilities, most of these responsibilities were delegated to the health information officer.

#### **Box 5.5. Health information roles and responsibilities of the facility manager**

1. Ensuring a patient and data flow map is available for the facility.
2. Storage and safe keeping of data records in the facility for auditing purposes.
3. To do weekly spot checks to ensure the aggregated totals equal to the numbers recorded on the service point registers and with patient records.
4. Ensuring that each service point within the health facility submits their service totals on time, according to the Data Flow Policy.
5. Ensuring that the validation rules that were violated are corrected or commented on and that feedback on violations are given to the sub-district/substructure/district office.
6. Sign off the data, which reflects an accurate account of the services delivered in the health facility.
7. Correcting or explaining any inaccuracies in the data.
8. Providing feedback on data quality and performance of the facility to the staff.

9. Advocate and encourage for the use of information.
10. The compilation of the correct and timely monthly aggregated data reports.
11. The accuracy of the data compiled in all reports.
12. The submission of the aggregated data reports to the sub-district/substructure or district offices by 7th of each month.
13. The filing of the Data Collection Tools and aggregated data reports according to the Guide to Filing.
14. Correctly processing of data updates.
15. Ensuring that the facility is pre-determined audit ready.

### **Data collection and collation**

In both organisations, data was collected using a number of tools: programme data was either collected in paper-based registers, such as for HCT, prevention of mother-to-child transmission (PMTCT) and nutrition, or in electronic systems such as ETR.Net<sup>TM</sup> and TIER.net<sup>38</sup> for TB and ART respectively. The RMR routine data was collected on a data collection checklist which reception and clerical staff were responsible for completing for each client visit (head count and services rendered, including programmatic services). This checklist was attached to the inside of the client folder.

### **Data capture**

At the end of the client's visit, their folder was returned to reception where the information on the data collection checklist was captured. In City Health this was done by reception clerks while in MDHS, this was done by health information clerks. In City Health, the system used for data capture and management, Prehmis, allowed disaggregated data to be collected for each client, including the attending clinician for the visit. During the time of this research, MDHS was implementing a new electronic record-based data capture and management system called PHCIS which required manual data capture by data clerks, but was eventually to become automatic, with clinicians using scanners and bar codes to capture individual client consultation information.

### **Data validation**

At facility level, a clerk or nurse was assigned the responsibility to check for data completeness. However it was the facility managers' ultimate responsibility to check the validity of the data and "sign off" the RMR data (i.e., authorise the submission of the data as

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<sup>38</sup> These are proprietary software packages for managing TB and ART data.

an accurate reflection of the services delivered in the facility). Data validation and entry could only continue to a set cut-off date each month, after which the data was considered final.

### **Data repositories and flow**

Sinjani (a web-based database system) was the primary electronic information management system for the province, replacing the DHIS (an access database system). During this research, City Health transferred from DHIS to Sinjani: this was a complicated transition period, as validation rules were still being written into Sinjani to improve the data quality. Furthermore information technology (IT) experience was required to move the data from DHIS to Sinjani.

Collated RMR data was sent electronically by each facility to the sub-district/substructure health information officer by a pre-determined set date of the month who then imported the RMR data and validated it by another pre-determined date. The process of validation in the sub-district/substructure office involved checking the data for completeness and errors, and discussing any problems with the concerned facility manager (City Health) or the facility health information clerks (MDHS). The sub-district/substructure health information officer also captured the register-based data directly into Sinjani/DHIS. After the cut-off date for data entry and validation, the data was made available to all users of Sinjani/DHIS (City and MDHS, as well as Western Cape Department of Health) and reports were considered as final. The data flowed automatically from the sub-district/substructure office up to the district and provincial office. As the national office and the other provinces still used DHIS, provincial IT staff were responsible for drawing data from Sinjani and transferring it back into DHIS for national staff to be able to access the data.

### **Data reporting and use**

Most of the information that facility managers were expected to use was drawn from programme registers or the Routine Monthly Report (RMR). Together this information (and component data) formed the bulk of the minimum dataset that had to be routinely reported at national and provincial levels. Disaggregated data and indicators (data numerators combined with denominators to give more meaning) were available for facilities, sub-districts/substructure and districts in routine reports, which allowed for comparison across facilities to

the sub-district average, and across sub-districts to the district average. Indicators were reviewed by facility and sub-district/substructure managers on a monthly and quarterly basis (City Health and MDHS respectively) in a PDR (Plan-Do-Review) process.

## **5.5.9 Human resource management**

### **Changing organisational structure and processes**

During the period of study, the facility managers were taking on more responsibility for the processes of human resource management, in a context characterised by change. In both organisations, HR management functions were decentralised to facility managers in 2010, coinciding with the publishing of *HRH Strategy for the Health Sector: 2012/3 – 2016/7* (Department of Health, 2010a). In City Health, the decentralisation was from the HR Department in City Corporate (the body responsible for support to all City of Cape Town departments) straight to the facility managers. HR support to facility managers for City Health employees remained in the City Corporate HR department. The sub-district office was staffed by only one HR clerk, who supported administration, data capture and reporting, but was not able to offer guidance on interpreting and applying the new HR policies.

In MDHS, HR management was decentralised from MDHS head office to substructure offices, with the establishment of an HR team, under a deputy director, to provide support. This team was responsible for providing support to the facility managers who, as part of their job description, were tasked with routine HR management processes. The decentralisation coincided with larger organisational change; the substructure office was formally established in 2007, with HR staff physically moving from the district office to the newly-built substructure offices in 2010. Human Resource Development (HRD) training was only decentralised later, and moved to the substructure in 2013.

The HR responsibilities of the City and MDHS facility managers were detailed in their job descriptions. In both organisations the HR responsibilities were similar in scope and were considerable. The management of absenteeism was included, with specific policy guidance

on managing training, leave and disciplinary procedures. The responsibilities are summarised in Box 5.6.

### **Box 5.6. Human resource management responsibilities of facility managers**

*Document review of job descriptions (City – approved December 2002; MDHS – undated).*

*In the City, the facility manager is responsible for the supervision and monitoring of aspects of staff performance, including absenteeism. Other responsibilities include: mentoring, coaching and supporting personnel; ensuring the implementation of the Human Resources policies and procedures; adhering to the Labour Relations Act and the City of Cape Town’s disciplinary code; implementing disciplinary procedures; identifying training needs; developing a Work Place Skills Development plan for the facility; scheduling of course attendance; assisting the Programme Manager in recruitment and selection; utilising staff effectively by task and programme selection; motivating for additional staff to be sourced from private agencies; conducting performance appraisals; orientating new staff; managing NPO staff deployed in the facility. There is specific provision made in the Job Description for authorization and delegation of tasks and portfolios to subordinates.*

*In MDHS the facility manager is responsible for ensuring that the following are in place: the facility is fully staffed; staff training needs are met against the SDP; there is harmonious Labour Relations; a Service Performance Management System is in place; absenteeism is reduced; and the establishment (list of all posts which are allocated to the facility) is verified. To achieve these outputs the facility manager is responsible for the following activities: recruitment and selection processes; skills plan development and implementation; ensuring that the codes of labour relations are adhered to; signing off individual personal development plans for all staff with at least 2 quarterly reviews completed as well as an annual appraisal; maintaining a register to track the leave system; and checking the facility establishment monthly.*

In the decentralisation of HR management to facility managers, insufficient attention was given to their training and to preparing the systems and processes to support them. For example, in City Health, facility managers attended a two hour training session before taking on HR responsibilities. They were made responsible for the monitoring of leave usage and for taking supportive, corrective (rather than punitive) action when abuse of leave was suspected or excessive leave usage was identified. The leave policy required facility managers to use discretion in its application, so as to foster a healthy working environment. Further facility managers had to pay attention to administrative justice, and procedural and substantive fairness. Most facility managers reported that they had had to learn how to manage leave of absence “on the job”. This was a difficult process, because they managed a number of staff who had chronically abused their sick leave entitlement, and who had been inadequately managed for many years. No formal attention was given to how to support facility managers in managing particularly difficult staff, who had used excessive leave over many years; nor was there any attempt to involve the HODs in a re-orientation and training programme for the

expanded role (although it was expected that, in large facilities, managers would involve their HODs in managing leave of absence).

As facility managers took over the direct HR management processes of facility staff, new HR procedures were being implemented and revised; others were being retracted (e.g. a system for booking locums in MDHS). Management tools, such as templates for record keeping, were being developed and used for the first time (e.g. City Health templates for keeping track of staff counselling as part of the disciplinary process). The need arose for systematic facility-based filing of HR records, and these systems developed organically and differently in each facility.

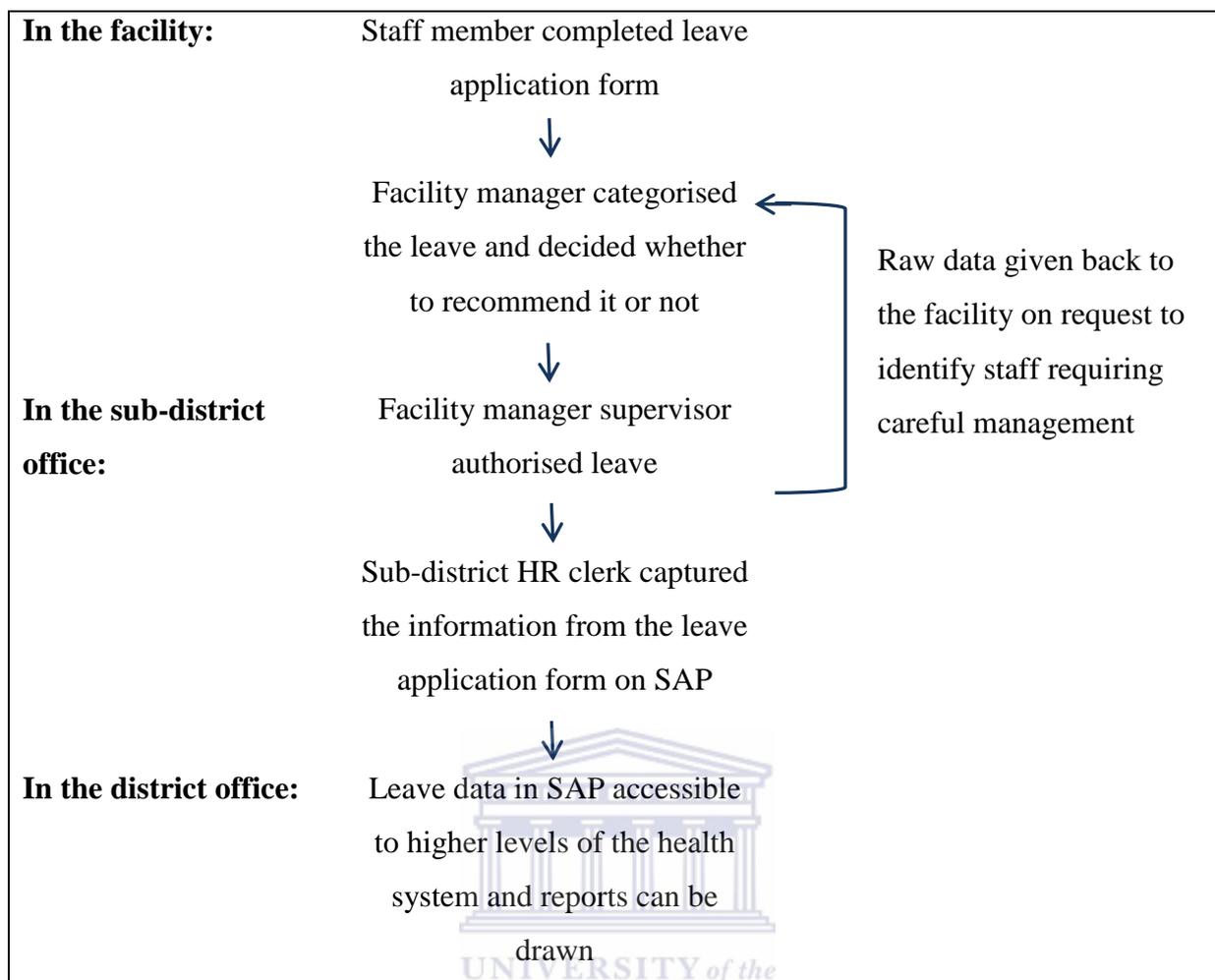
In City Health, the lack of a sub-district resource person meant that the facility managers had to approach the central City Health HR office for advice and support. For those who took the initiative to do so, the relationship that developed was described as supportive and responsive. However City HR was not proactive in understanding the facility managers' needs. For example, while useful reports were available to identify users of excessive leave, City HR had not made the sub-district managers or facility managers aware of them, and claimed that there was no demand from the facility managers. In MDHS, the overall relationship between the facility managers and the HR office in the substructure was strained, and characterised by poor communication in 2012 and most of 2013. Facility managers felt they were not adequately informed about progress in creation of new posts and in the recruitment and appointment of staff. They reported that they were scapegoated when the substructure HR office performed poorly. The strained relationship was a barrier to learning opportunities. In mid-2013, the appointment of a new HR deputy director was heralded as an opportunity to improve communication, support and systems.

### **Sub-district and facility HR processes and data management for leave**

City of Cape Town and Western Cape Provincial Government both had detailed human resource policies which required line managers to monitor and manage leave of absence, and which set out some of the processes required.

Of particular importance in this research were the data management processes related to leave. These are illustrated separately for each organisation in Figures 5.6 and 5.7. The two organisations used different electronic databases for managing HR data. City Health used the city-wide Systems, Applications and Products in Data Processing (SAP) database, a privately-developed integrated business software system for all employee HR functions, as well as for capital and operating budget management, procurement and infrastructure maintenance and for the business transactions related to service delivery. This was developed in 2000 and implemented in 2003. MDHS used the Personnel Salary System (Persal) as the central electronic database system; this system was maintained by the National Treasury for administration of the payroll for all national and provincial public service employees. There were separate systems for managing finances and logistics. For many years, the salary payment function drove the development of Persal rather than the HR management function, and the HR data was neglected and unreliable (Western Cape Provincial Treasury, 2006). In MDHS, the limitations of the staff establishment database were recognised. At the time of this research, other research was being done within the province and district, in conjunction with an academic partner, to determine appropriate software and to develop indicators.

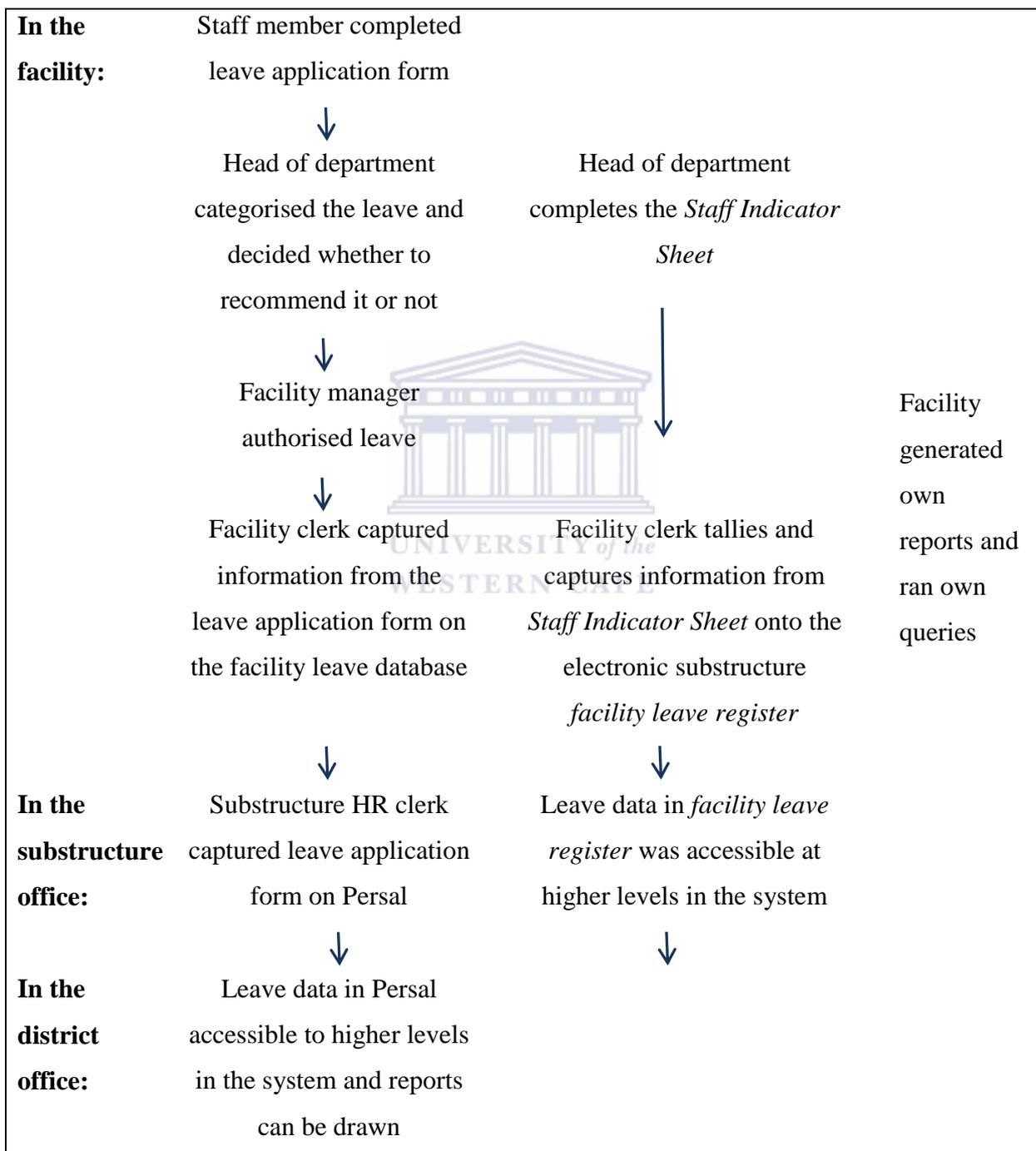
When a staff member took scheduled or unplanned leave, a leave application form had to be completed by the staff member. In City Health, facility managers were expected to note whether they recommended the leave and to categorise the leave as sick leave, family responsibility leave or unpaid leave (permission not granted or sick leave entitlement exceeded). The leave application form was then sent to the sub-district office for the facility manager supervisor to authorise. In MDHS, the facility managers authorised the leave themselves. In both organisations, it was considered good practice to keep a copy of the leave application form in the facility office, although there was no legal requirement to do so. Once authorised, the original leave application form was then sent through to the sub-district or substructure office to be captured and stored in the staff member's personal HR folder. Data captured in the electronic databases were then transferred electronically up to the corporate division of City of Cape Town and to the provincial office respectively for City Health and MDHS.



**Figure 5.6. Leave data flow in City Health**

In MDHS, HR leave data was captured in two parallel databases: one at the substructure office (Persal) and another at facility-level. In the index facility, the facility-based system to track and summarise leave, was introduced in January 2011. It was built using a Microsoft Excel spreadsheet and designed to capture the category of leave, the number of days leave taken per staff member and the dates of leave taken. Data was captured from the leave application forms before they were sent to the substructure office. The responsibility for data capturing was allocated to the personal assistant (PA) to the facility manager. This system, however, never reached its full potential as, in July 2012 the substructure office introduced an electronic Facility Leave Register (also built in Microsoft Excel) to all facilities across the substructure with a standardised version of a daily staff attendance sheet called the *Staff Indicator Sheet* (a monthly grid showing, by department, each staff member daily attendance or leave) as a tool for recording leave taken. The head of each department in each facility was required to complete the Staff Indicators Sheet, with leave was categorised as vacation,

absent without pre-authorisation, sick or family responsibility. This was submitted on a monthly basis to the facility manager. A clerk tallied the number of days' leave per category for each staff member and entered this into the electronic Facility Leave Register, which summarised data per department and generated a graph, showing the absolute number of days leave per leave category per staff category.



**Figure 5.7. Leave data flow in MDHS**

The substructure version did not record the actual dates when leave was taken, which the index facility had found useful when staff queried their leave usage. The index facility therefore continued to maintain the in-house facility-based system in addition to the substructure version and Persal.

There was no routine reporting of leave information from the sub-district/substructure back to the facility managers. In City Health, the sub-district HR clerk responded to ad hoc requests from individual staff members to confirm their remaining leave entitlements per leave category, and from the facility managers who needed to know where their staff stood. To reduce the frequency of these requests, he printed a data report every three to six months for each facility manager. The report was aggregated for each staff member and showed the number of days of sick leave taken per staff member per leave category. In MDHS, the substructure clerks likewise provided individual leave information on request, but the data was not reliable, as leave applications were often lost in transit or data capture was in arrears. The parallel systems instituted first by the index facility, and then the substructure, were an attempt to generate more reliable information accessible to the facility managers, so that facility managers could run their own queries and print their own data summaries. The remaining obstacle to facility managers using formal HR information efficiently was that, at the time of this research, indicators were still being developed by the substructure and Western Cape Department of Health to identify staff members who, and departments which, took excessive unplanned leave.

In both organisations, a similar step-wise approach was followed in managing staff who took excessive sick leave, as is shown in Table 5.2. In City Health, the policy required two initial steps instead of one, adding a back-to-work interview after any instance of unplanned leave. The purposes of this back-to-work interview were to establish the cause of unplanned leave, inform the staff member of any policy and procedural changes that arose while s/he was off, inform the staff member of any consequences of their absence (or of a subsequent absence) and fill in a leave application form. At such an interview, it would, for example, be pointed out that, if a pattern of taking sick leave was identified, the next instance of sick leave might result in a disciplinary hearing. Individual informal counselling gave facility managers an opportunity to identify and discuss the cause of the potential abuse/excessive leave, and to devise remedial action with the staff member concerned to avert the on-going taking of sick

leave. With repeated episodes (for example, in the case of City Health, 12 days unplanned leave in a 12 month period), the facility manager was required to hold a formal *incapacity meeting* (if incapacity was suspected) or a disciplinary meeting (if abuse was suspected) in the facility. Formal templates guided the systematic documentation of the formal counselling, and formalised the information collected pertaining to the staff member and to how the facility manager was managing the incident using corrective measures. If further episodes of unplanned leave arose, the facility managers were expected to institute an incapacity hearing (if incapacity was suspected), or a disciplinary hearing (if abuse was suspected); such hearings were held in the district office and required an independent chair, and a representative from the Labour Relations section of the district-level Human Resource Management department, and from the staff member's union. The policy guiding the hearings gave the chair the authority to call for evidence, to grant additional sick leave (in the case of incapacity in City Health) and to impose sanctions, including dismissal (in the case of abuse). The evidence, proceedings and findings, were documented and kept in the relevant staff members' personnel file in the substructure (MDHS) or district (City Health) office.

**Table 5.2. Step-wise approach to managing unplanned leave of absence**

	<b>Meeting</b>	<b>Description of meeting</b>	<b>Documentation</b>
<b>Step 1a</b> (City Health only)	Back-to-work interview following any instance of unplanned leave	In facility: facility manager interviews staff member	Back-to-work interview form
<b>Step 1b</b>	Informal counselling	In facility: facility manager counsels staff member	Communication book
<b>Step 2</b> If abuse or incapacity suspected:	Disciplinary or incapacity meeting	Facility-level: facility manager interviews/ counsels staff member; union representative may be requested by staff member	Formal report templates completed and kept in the facility
<b>Step 3</b> If repeated episodes of abuse or incapacity suspected:	<u>Disciplinary or incapacity</u> hearing	District-level: facility manager is the initiator, an independent chair is appointed	Documentary evidence is compiled and formal report template is completed and kept by the district HR office

## 5.6 Nature of management *at the coalface*: managing primary healthcare facilities

It was a common experience of facility managers that the working day was frequently interrupted by staff and clients making queries, demands, complaints and reports that required immediate management attention. This made it difficult for facility managers to be organised and systematic in their approach to managing programmes. In addition, there were a number of meetings and requests from the sub-district/substructure office, both pre-planned and spontaneous, which interrupted the flow of the working day and made time available unpredictable:

*I'm also failing on doing the follow ups (to ensure that programme clinical guidelines are followed), I don't have time, there's a lot of time out of office and then we need to drop everything and then look for those things and the deadline is an hour you are so derailed all the time you can't focus on anything.*

(Index facility manager, interview 2)

Even the more experienced facility managers with over five years of management experience reported that they felt overwhelmed at times and required more support. Facility managers experienced demands from all sides: this included pressure from the sub-district/substructure itself to respond to priorities that were being cascaded down through the health system and they experienced the concomitant deadlines as unreasonable. In addition, they were expected to be responsive to clients, and so minimise complaints, and to respond immediately if complaints were made. Finally they had to care for their staff and improve the work climate in the facility, often dealing with those who took excessive unplanned sick leave, as well as their demotivated colleagues who then faced higher workloads.

The following description of a day in the life of one of the first-level index managers, in Box 5.7, illustrates something of the scope and nature of management in this context. It does not capture everything that happened on the day (due to the limitation of the researcher taking the notes) but it does give sufficient detail to explore the context of decision-making. It shows how relationships with staff (e.g. greeting face-to face; checking if staff are coping with the work load; dealing with a disgruntled reception clerk), as well as with clients, were managed. In the course of the day, this first-level facility manager had to deal with the unexpected (a

student nurse arrived unannounced), put scheduled work aside (e.g. to do manual corrections to the clock-in attendance times) and take back delegated work (the PMTCT register). Some of her day was planned (validating data, visiting a local school head master) but many of the decisions she took were made on-the-spot as she responded to issues as they arose.

### **Box 5.7. A day in the life of a first-level facility manager**

*Observation notes taken on 30 July 2012, time: 07h30 to 16h30 during observation at Facility C*

*07h30. Facility manager C starts work. The building is already open and there is a general worker and an enrolled nursing assistant on duty who she greets. She goes to her office. The rest of the staff report to her office as they arrive. There is an automated clock-in system mounted on the wall outside her office but she likes to greet her staff face-to-face. She receives a phone call from an enrolled nursing assistant who is sick today and will not be at work.*

*A fourth year nursing student arrives to work at the facility for 2 weeks. Facility Manager C had not been informed that she would be coming. She questions the nursing student and decides to accept her word so walks her through the facility to orientate her and introduce her to staff. She uses the opportunity to inform the TB room that the ENA, allocated to work in the TB room, is off sick and to discuss whether they will cope without her. The sister in charge of the TB room feels that she will manage the client load, together with the TB clerk. The previous ENA working in the TB room resigned in January and was only replaced in June, and they managed for this period. Facility Manager C then allocates the nursing student to work in the prep room where children are weighed and temperatures taken before they are seen by a curative nursing sister. As she walks through the facility, Facility Manager C takes note of the number of patients at each service point. She is satisfied that all the service points are working, and that sufficient patients are being processed by reception. The workload looks manageable.*

*08h42 Today the telephone in the TB room is not working and so Facility Manager C informs the admin officer in the Sub-district office. She is told to fill in a requisition form, and to phone the IT department. The IT department wants to know if the problem is with the phone or the telephone line, so Facility Manager C takes the telephone from the manager's office through to the TB room to try it out. The problem appears to be with a line. She phones IT again with this information and they then give her a reference number which she includes on the requisition form.*

*09h02: A community health worker (CHW) employed by an NPO reports to the office to inform Facility Manager C that she had completed her health education talk in the facility and to ask her to sign the attendance form. Facility Manager C checks that the CHW is promoting IUCD insertion and tells her that from now, IUCD insertion will be performed at Facility C every Friday at 10h00. Clients must make an appointment. IUCD insertion is the sub-district priority. Facility X does not have a professional nurse who has been authorised to do IUCD insertion, so a professional nurse will come from Facility Y to do the IUCD insertion.*

*09h12 One of the general workers comes in to say that she is sick, and Facility Manager C gives her permission to go to the doctor. One of the clerks comes in to ask if she can be excused from her work at reception to validate the monthly RMR (routine monthly data). She reports that reception is quiet and there is one other clerk who can take in clients as they arrive. The facility manager grants her permission to leave.*

*09h23 Because it is the end of the month, her plan for the day includes validating data. She has delegated the maintenance of the HCT, PMTCT and nutritional support programme registers to her staff. Today they check the monthly totals and follow up on discrepancies and missing data. Sister L is in charge of the HCT register*

and has discovered that the new HCT counsellor, who started a month ago, has been making a number of errors in the register. She asked Facility Manager C if she could please take over maintaining the register and mentor the counsellor. Each professional nurse and staff nurse carries out HIV testing in their rooms. They have what is called a mini register, which is an A4 size copy of the HIV register page and they complete this after each test. At the end of the day they take these sheets to the lay counsellor, who then transcribes the data into the facility HIV register. Usually the lay counsellor records the tests she does directly on the register as she has a higher workload but Sister L is suggesting that the lay counsellor also uses the mini sheet, and that she then supervises her in transcribing all the sheets into the register. Facility Manager C agrees with the suggestion, but says she would like to speak to the lay counsellor. 'It is not what you say, but how you say it' and she wants to convey to the lay counsellor that this is not a punishment for bad work but rather a way of supporting her in learning to do the job better.

Facility Manager C makes a telephone call to sort out a problem she has had in registering two new staff members on the facility-based clock in system: the new enrolled nursing assistant and a nurse transferred from Facility Z. The call is not answered and Facility Manager C does not get round to making a follow-up call.

10h03 Facility Manager C receives a phone call to say that the facility managers meeting with the facility manager supervisor has been cancelled. Today she was prepared to miss the meeting, and had already sent apologies, because she had been given an appointment with the principal regarding the introduction of a family planning program at his school. This is a high priority.

10h19 Two men from a private pharmaceutical distribution company arrive with boxes of drugs for Facility C. Facility Manager C checks that the boxes are destined for Facility C and do not belong to the adjacent facility. She does not open the boxes as she has delegated the ordering and unpacking of pharmaceuticals to her second-in-charge.

11h09 Facility Manager C prepares to leave the facility to go to the school. She walks around her facility and checks on each service point. A number of children are now waiting outside the 2 curative consulting rooms. Recently a procedure has been introduced throughout the sub-district which requires staff at each service point in a facility (e.g. reception, prep room, consulting room) to note the time they begin to attend to a client. When Facility Manager C does her rounds, she looks at these times to see whether clients are waiting too long or not. She is finding this very helpful. She checks the time recorded for when the children were seen at reception (between 08h56 and 09h17). So far the children have been waiting approximately 2 hours. She puts her head in at the child curative consulting room to see how the professional nurse is coping, and gets a reassuring nod.

Next she goes to the reception area. There are only 4 clients waiting to be seen. Facility Manager C speaks to the clients. One complains that she has been waiting since 09h00. Facility Manager C apologises and says this is not right. She then asks a number of checking questions. There is no clerk at the reception window so Facility Manager C goes into the reception room to find her. The clerk is busy capturing data at a computer terminal for the clients who were seen at the facility yesterday. The clerk feels that she has been doing all the work and that the second clerk should come and help. Facility Manager C explains that it is not acceptable to have a family planning client wait so long.

11h42 Facility Manager C arrives at the school for her 11h45 appointment and waits for 15 minutes before the school principal can see her. She introduces her request to him by saying 'we have a joint problem'. The principal is very receptive and explains that he has 2 learners who have had babies this year, and there are another 4 learners who are currently pregnant. Facility Manager C asks him more about this experience. She then describes the strategy that the sub-district has developed, whereby each clinic works closely with a school and offers reproductive health education. The principal promises to put it on the agenda for the next governing body meeting which is on Thursday, and says that he will then phone Facility Manager C.

13h24 Facility Manager C returns to the clinic. She checks in with all the service points and greets the patients still waiting to be seen. There are no complaints. She then settles down in her office with her lunch to work on the manual corrections to the clock-in attendance times. This is necessary because 11 of her 13 staff have had instances where they have forgotten to clock-in or out. She does not have time to finish this because she realises that she must leave time to review the PMTCT register. This is a task delegated to Sister F but, as the child curative service is busy today, Sister F will not have time to do it and so Facility Manager C has decided to take back the responsibility.

14h39 The child curative service has quietened down and Sister F comes to the office. She is the current family planning champion and Facility Manager C needs to know how the project is running as she has to report on this to her supervisor. Sister F explains how she has monitored the number of clients motivated by staff to receive a family planning method as part of their clinical visit. They discuss the results of the monitoring and then further strategies to improve the family planning uptake in the facility. Facility Manager C suggests that they target the ART clinic to find defaulters and new clients and Sister F thinks this is a very good idea. She then says she doesn't want to be the champion anymore. Facility Manager C suggests they raise this at the next staff meeting.

16h00 Staff who started work at 07h30 come in to say that they are going. They briefly report on unexpected problems that arose during the day, and how they have been handled. The facility manager from Facility Y phones to ask if she can use Facility C's car tomorrow morning as their car is being serviced and she needs transport to a meeting at the sub-district office. Facility Manager C checks her diary and says that she can release the car. She then realises that she has not attended to all that was on her task list for today, and is annoyed that she forgot to follow up on the call to sort out the registration of staff on the clocking system. That will need to wait until tomorrow as the head office is closed. All clients have left the building and the staff who started work at 08h00 now come to the office too for a final word with Facility Manager C.

16h41 Facility Manager C leaves the office.

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The job descriptions of the facility managers in City Health and MDHS are included in Appendices 2 and 3 respectively. Though expressed differently, they broadly covered the same management responsibilities which included operational planning, internal and external communication, monitoring and evaluation activities and human resource, finance, supply chain and logistics management. At the time of this research, facility managers spent most of their time managing service delivery and human resources. Inefficiencies in the procurement system meant that this was an ongoing cause of frustration, requiring follow up. Little financial responsibility had been delegated to the facility managers and this did not appear to be a major aspect of their work during the study period. In City Health, finance was an agenda item reviewed in the monthly one-on-one supervisory meeting, and in MDHS it was part of a monthly supervisory meeting through review of the data from the Budget Management Instrument (BMI) tool.

The nature of second-level management was complicated by working through heads of department (HODs) and a cascade of meetings. The HODs had authority delegated to them from the facility manager for the operational management of their department, including line management and clinical supervision of their staff; the facility manager remained responsible for strategic decisions within departments and oversight of new policies and process development, as well as operational or strategic decisions that cut across departments or which affected the whole facility. The facility manager's position above the HODs allowed her to see what the implications of a change in one department would be for other departments.

To a large extent, the facility manager relied on her HODs for gathering, selecting and summarising information from their various departments. The index MDHS facility manager (who managed approximately 190 staff) introduced a weekly Monday morning HOD meeting. This created a space for regular communication and joint decision-making. The meeting took approximately two hours and HODs were required to present a verbal and written report of operational challenges and successes in the past week, as well as alert the facility manager and other HODs of any non-routine department events and issues (e.g. training, meetings) that were anticipated in the forthcoming week which might impact on the functioning of the facility. This local innovation was subsequently taken up by the other second-level managers in MDHS. Once a month, the Monday HOD meeting was extended to four hours and took a more strategic focus. Inter-departmental issues were discussed and HODs were invited to participate in joint problem solving and strategising. Second-level facility managers still valued doing a morning round as a way of being visible and staying connected with their staff; it also gave them the opportunity to see for themselves how the facility was functioning, and to interact with clients.

The facility managers all expressed frustration that little thought had been given to the selection of HODs and many were not committed to taking on management responsibilities in their departments. There were many instances where HODs blocked communication channels and did not implement strategies that had been collectively agreed upon. This made the task of management very difficult.

*The message to the HODs is like 'We need to do this, we need to do, we need to do this'. So you have to say it all the time. Because if you don't they think, 'Oh! It's not important now'. (Index facility manager D, interview 3)*

*You see the HOD's must be empowered because for us to be empowered, know how to do stuff [is not enough]; and then the thing gets stuck by the HOD's and they not taking responsibility of enforcing the policy.*

*(Peer facility manager, MDHS workshop 3)*

## **5.7 Summary**

This chapter has explored the context of the three cases in this research in as far as the context set expectations of the facility managers and influenced how they engaged in decision processes, worked with information and made decisions. Based on an extensive document review it has described the context across levels of the health system, from national to provincial to the district and sub-district, covering the policy environment, with special attention given to the District Health System, planning, quality improvement and the development of the health information system and of human resource management. Drawing too on data collected in interviews and on observation, it has furthermore covered the structural arrangements, processes and practices related to management, planning, performance management, and supervision across the levels, but especially at the levels of the district and sub-district. It ends with the nature of management *at the coalface* as the context for decision-making at facility level. In the three chapters that follow, the three individual cases are presented.

# Chapter 6. Findings: Managing Efficiency of Service Delivery

## 6.1 Introduction

In South Africa long waiting times are one of the main complaints raised by clients attending primary healthcare services and is an area of focus for quality improvement initiatives. Facility managers are tasked with improving efficiency of service delivery to reduce waiting times in facilities.

### 6.1.1 Defining the case

This case was constructed from a number of interlinked processes all of which related to managing the efficiency of service delivery. These processes were: managing client intake and deferral; managing client flow through the facility; and managing staff workload and allocation of work. At the time this research was conducted, there was a dual aim in managing efficiency of service delivery: first to maximise service delivery, and second to reduce client waiting times within facilities. Long waiting time was one of the main complaints of clients attending the health services in this sub-district/substructure preceding and during the time of this research.

The case was confined to the *routine decisions* that facility managers make. During the process of data collection, a number of interesting initiatives were identified at district level to reduce congestion within the facilities, such as the establishment of Chronic Dispensing Units, which reduced waiting time for repeat dispensing of chronic medication to stable clients, and expansion of community Directly Observed Treatment Short Course for Tuberculosis (TB DOTS), which shifted client care from the facility to the community. While facility managers participated in managing the implementation of these initiatives, they were strongly driven by the district and sub-district/substructure. The key decisions in these initiatives were beyond that scope and authority of the facility manager, requiring as they did

re-engineering of the primary healthcare platform at district level, with substantial investment in strengthening the community-based services. They were therefore not included in this case.

The index MDHS facility was a large facility, with a number of separate departments operating in different wings of the main building (OPD [outpatient department] section, ART [antiretroviral therapy] section and trauma), as well as from different buildings on the same site (MOU [midwife obstetrical service] and dental services) and off-site (Reproductive Health clinic). For simplicity, only the processes of client intake and flow, and work allocation in the main OPD were included in the final case description. While there were some variations in how processes operated in the other departments, they did not reveal sufficient differences in information use to be included.

### **6.1.2 How managing efficiency of service delivery is linked to other cases**

This case is linked to another case: *Managing Leave of Absence*. When staff were absent, the facility's capacity for service delivery was reduced, and the number of clients admitted to receive services that day was reduced. Another result of absenteeism was that work had to be re-allocated between the remaining staff members, to ensure that all priority services were offered, and that service delivery was kept at a maximum. Absenteeism therefore impacted on this case, and was a priority management concern, which is why it was selected as a potential management leverage point and was included separately in this multiple case study.

## **6.2 Managing efficiency of service delivery in facilities**

The management of efficiency of service delivery required attention to: client intake; the organisation of services (i.e., which services were offered where, at what service points, within the facility); and to streamlining processes at key service points, in particular at reception, prepping stations and pharmacy, through process engineering. In addition, efficiency of service delivery required management of work productivity and work allocation amongst staff.

The vignette in Box 6.1 below describes how an index City Health facility manager managed service delivery on a day when her facility was extremely short-staffed. It demonstrates how facility managers had to manage the impact of absenteeism in their facilities: at the time of this vignette, the sub-district as a whole was understaffed, because a number of professional nurses (PNs) were attending a reproductive health course. The facility manager's emergency plan of action concerned two key foci of management: managing client intake (limiting client intake in the early morning, informing clients in the general waiting area and encouraging voluntary deferment, revising the client intake later in the day); and managing work allocation (attempting to secure additional staff, re-allocating staff to cover all service points, freeing herself of managerial work, to do clinical work for the day).

A further two foci of managing efficiency of service delivery, not illustrated in this vignette, related to managing staff workload, and managing client flow. All were managed predominantly in a reactive mode, although some aspects of managing client flow were proactive.

The tasks varied considerably between the first and second-level facility managers. The three index City Health facility managers were all first-level managers of small facilities, and were actively involved in the daily and ongoing assessment of client intake and flow, and work allocation. In contrast, the index MDHS facility manager was a second-level manager and had delegated the responsibility of managing client intake to the clinical manager, (a doctor with management responsibilities over the clinical staff in the facility), and to the operational HOD (Head of Department) in charge of OPD. The first-level managers of the smaller MDHS facilities in the peer group reported similar management approaches, and key decisions, at the first-level index City Health facilities; the second-level manager of the larger City Health facility in the peer group was however more actively involved than the index MDHS second-level manager, possibly because her facility was considerably smaller (35 staff members, compared to the MDHS facility which had 180 staff members).

## Box 6.1. Managing service delivery when very short-staffed

### *Observation notes taken on 3 July 2012 during observation at Facility B*

*Facility Manager B says that before she set off for work, she already knew that she was going to be short-staffed today and had made a plan of how to allocate her staff. Both her enrolled nurses are sick (one long-term awaiting possible boarding and the other for a few days), one PN is on annual leave and another is attending training. On her way to work she received a message that a third PN was sick, which meant that she had to adapt her plan.*

07h55

*On arrival she goes to reception to tell the staff not to admit any further clients until she had found out whether she could secure more staff. She then goes through to her office and immediately starts making a series of phone calls to see if she can borrow staff from other facilities. In particular she wants a staff nurse to assist with immunisation. She says that she already knows that she wouldn't be able to get a PN because so many are on training in the sub-district, so is aiming for an EN. She explains to me that she is only asking from the larger facilities as she already knows that the small facilities are similarly short staffed: all have a PN on training. After three phone calls she has ascertained that none of the larger facilities can offer her any staff.*

*Facility Manager B then explains to me that that she has to anticipate and plan ahead. Because she knew she would be relatively short-staffed today, she has already validated her month-end statistics at home so that she can be on the floor today if required. She says her strategy is first to try to secure more staff, and then to address the waiting room.*

08h34

*She introduces herself to clients in the waiting area as the clinic manager, and explains that there are very few staff today, asking patients to please be patient. She reassures them that all the clients who were currently admitted would be seen but they would wait longer. She says that if anyone has any problems, then please to speak to her and she will try and sort them out. She explains that she too would be seeing patients to try and deal with the load. She says that all emergency cases will be dealt with and asks mothers and carers to please tell the enrolled nursing assistant in Room 2 (doing the sorting and prepping) if they have a child with diarrhoea who they think might be dehydrated, or if they have a child with a temperature or fast breathing. She asks if there are any questions. There is one question: What about emergencies that arrive later? She explains that all emergencies will be seen.*

*She then goes to work in the immunisation room.*

11.33

*Facility Manager X has finished doing the immunisation, and goes through to the front of the clinic to check on how the other service points are coping. The enrolled nursing assistant has almost finished with the clients at the prepping station and says that there are not many clients waiting to be seen at the child curative consulting rooms. Facility Manager B walks past the child curative rooms and observes the number of people in the general waiting area. She does not count the Road to Health cards piled in the intake boxes but just observes the waiting area. She decides that more clients can be admitted.*

## **6.3 Focal areas of decision-making in managing efficiency of service delivery**

The main issues in managing service delivery clustered around four focal areas of decision-making. The vignette above illustrates two daily concerns: managing client intake and work allocation. A third focal area, significant on most days observed, was the management of client flow through the facilities. The fourth focal area was managing workload performance, a periodic activity which was managed as problems arose. This section describes how facility managers managed each focal area, and the key decisions this entailed.

### **6.3.1 Client intake**

#### **The process in smaller facilities with a first-level manager**

The three index City Health facilities, the other small City Health facilities, and the small MDHS facilities all followed similar intake procedures. Clients were generally admitted and seen for service delivery in the order in which they arrived at the facility, unless the client was an emergency case. During the period of this research, City Health ran a reproductive health project which mandated the sub-district-wide introduction of appointment time slots for reproductive clients, based on the clients' time preferences. This was based on the experience within an ART clinic in one facility, which found that the use of appointment times considerably reduced congestion and waiting times at the ART clinic. While the intention was more to improve client flow (discussed in the next section) than to manage the client intake, it required a commitment from the facility that clients would not be deferred on their return visit, if they presented at the agreed time slot. At the time of the study, appointment dates and times were generally given by the clinical staff and noted on the client's card, but not formally recorded by reception. In the smaller MDHS facilities, appointment dates, but not times, were given to all chronic clients. Clients who arrived on their appointment date before 08h00 were then prioritised to be seen that day.

A sub-district wide strategy to improve the process efficiency of client intake, which was implemented in all three index City Health facilities, was to have one of the two clerks start work early (at 07h30) so that sufficient clients had been admitted by the time the clinical

stations opened at 08h00. Some clients started queuing from early in the morning, as is described in Box 6.2 below:

### **Box 6.2. Early morning intake process in a small facility**

#### ***Observation notes taken on 10 October 2012 during observation at Facility B***

*At one facility on a day of observation, 32 adults, most accompanied by one or more children, were already queuing outside the clinic door at 07h00. The first client in the queue said she had been waiting since 05h20. The second client in the queue said her husband had arrived at 05h35 to keep a place for her and her newborn baby; she took over the place at 07h00. The doors of the facility opened at 07h30 and clients moved inside in an orderly fashion and placed their clinic cards in a set of boxes labelled according to the main services offered. Those who do not have a clinic card made use of the paper and pencils provided, to write down their names, and these slips of paper went into the boxes as a marker for their place. Two women who were unsure of where to place their cards missed out on having their place in the queue kept. At 07h40, a clerk came to the front desk and started to attend to the queries. Once all the queries were dealt with, she started to draw and prepare the client folders.*

Facility managers were aware of the early morning queues and used local media to discourage this, and instead to encourage clients to attend throughout the day. They monitored the success of this by periodically speaking to the first clients, or hearing from the reception staff. They also observed the reception area at intervals throughout the day, to ensure that the boxes remained out, to allow ongoing intake. A pervasive previous practice had been to control the intake for the day by removing these boxes. Communities had come to understand the removal of boxes as a signal that the facility was full for the day and voluntarily left the facility. At the time of this research, facility managers were actively observing the reception practices to ensure that this was not done.

When the facility managers felt that the client intake approached the capacity of the staff complement on duty, they had to decide whether and when to defer clients. The policy in both organisations at the time of the study was that no client should be turned away without going through a specified deferment procedure, which involved issuing a folder, doing basic observations (usually done by an enrolled nursing assistant [ENA] if available) and then being assessed to decide if the client could be deferred. In City Health, the policy stipulated that this assessment was done by a PN. In MDHS, a triage system, which allowed for deferral, had only been introduced to the large 24 hour facilities; smaller facilities had not yet been trained on the assessment criteria though which they were expected to assess clients

before deferral. MDHS facility managers used different categories of staff, ranging from the most qualified or experienced staff member (sometimes the facility manager herself) to the least qualified (an EN or ENA). They noted that the identification of very sick clients relied on experience, which newly qualified staff or less trained categories of staff did not have; however they did not always have sufficient doctors, clinical nurse practitioners<sup>39</sup> (CNPs) or PNs to allocate to triage. Facility managers were concerned that, while putting a highly qualified person in busy areas such as the prep room or triage room can increase client intake and reduce congestion, it did not make use of the person's scope of practice sufficiently, and introduced other inefficiencies.

All three index City Health facility managers had a copy of the deferment policy easily available (full policy on desk or summary on noticeboard) and had a working knowledge of the policy. There were, however, differences in when and how they implemented the policy. While some aspects were uniform (e.g. emergency care), TB and family planning clients were exempt from deferral; clients attending *well baby* checks and developmental screens were the first to be deferred; it was noted that some managers cut down child curative services earlier than others. There were also differences in how they assessed the client load: one facility manager was prepared to make decisions based largely on observations of people waiting to be seen (clients and their escorts), while another did a rough count of the number of client folders still waiting to be seen at high volume service points. No formal information was available on how many clients had been taken in. The timing of deferment varied, though patterns emerged during observation. When short-staffed, City Health facility managers generally assessed whether they needed to defer clients early in the morning (around 08h00 or 10h00); if the problem entailed an unusually high client load, the assessment was generally made later around midday.

Some facility managers reported that they were reluctant to implement the deferral policy because of resistance from their clients or staff: one said that on very busy days, she tried to defer clients with minor ailments, but “you know that our people in (suburb X), they refuse to go”; in the end, all the clients had to be seen anyway; she also reported that her staff did not like to defer clients, as they felt it created more work, and only shifted the problem to the next

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<sup>39</sup> A professional nurse who has undergone further clinical training to be able to diagnose and treat common ailments.

day. Facility managers also spoke of the negative consequences of deferment on the longer-term relationship with community, and trust-building. They also had to balance reaching headcount and programme output targets with ensuring that staff could cope with the work load.

### **The process in a large facility with a second-level manager**

The larger facilities all had appointment systems for all non-trauma and non-emergency cases, supported by electronic databases, which were used to control the daily client intake. In the index MHDS facility, an appointment system operated in each of the three receptions (main outpatient department (OPD), ART section and the MOU). In the main OPD, clients were booked in three appointment slots: 07h00, 09h00 and 11h00, with a quota set for chronic clubs and general OPD. The electronic software supporting the appointment system did not allow these quotas to be exceeded. At the time of this research, the wait-to-next-appointment time was 43 working days for a chronic club<sup>40</sup> and 50 days for a general consultation. The clinical manager (a senior doctor allocated certain management responsibilities) recognised the prolonged waiting time for an appointment as a problem, but did not have any suggestions on how to remedy this and had not yet brought it to the facility manager's attention. The head of reception felt that the capacity in the chronic club needed to be increased. Because the waiting time for the clubs was so long, stable clients were being referred from the club room back to the clinical consulting rooms<sup>41</sup>

Every day, in addition to those with appointments, clients were admitted who did not have an appointment. Because it was a 24-hour unit and was open throughout the night, clients who arrived early were seated in a queue inside the facility under the supervision of a security guard. A help desk opened at 06h30, and these clients (and subsequent arrivals) were given a number. At 08h00 each weekday morning, the clinical manager reviewed the number of staff on duty and, based on minimum workload norms per cadre, determined how many unbooked clients could be admitted, in addition to clients with appointments.

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<sup>40</sup> Clubs were run for stable clients who can be seen by clinical nurse practitioners and which offer group support and education.

<sup>41</sup> Consulting rooms were staffed by doctors and were intended for more complicated or unstable clients.

The remaining clients without appointments were triaged by a PN trained in the South Africa Triage Scales. This system, standardised across the province, assessed the severity of the presenting complaint, vital signs and assigned a priority code. Any client with a red code was sent to the Trauma Unit for immediate attention. An orange or yellow code indicated that a client had to be seen that day and was sent to the consulting rooms to be seen by a doctor. The remaining clients were deferred with proof of attendance, which gave them preference to be seen by a doctor the next day.

At 10h00 the clinical manager again reviewed the intake numbers, specifically assessing how many of the clients *with* appointments had not arrived, in order to admit a commensurate number of clients without appointments; these clients were then taken from the triage queue. While this system of working to workload norms made sense in theory, in practice, most doctors and clinical nurse practitioners were observed to leave the facility in the early afternoon (unless they were on duty in the trauma room). Both the facility manager and the operational manager noted this to be a problem: clients were turned away earlier in the day, while clinicians did not work to their full capacity later in the day; also, they thought it was unfair that clinicians could leave early, when other staff were expected to work their full hours. This issue was raised repeatedly in the HOD meetings, but no corrective action was taken. The facility manager found it difficult to address as she was working through the Family Physician, the HOD in charge of the clinicians. It was a sensitive issue involving working across professional hierarchies and long-established implicit privileges.

### **6.3.2 Client flow**

#### **Smaller facilities: the City Health experience**

All three of the City Health facility managers had implemented an appointment system for some chronic client groups (in particular ART clients, clients on the nutritional support programme, antenatal clients and family planning clients), as a strategy to reduce the congestion in the facilities in the early morning. They used information boards at each facility to communicate the clinics' opening hours and placed items in the local newspapers to discourage very early arrival at clinics and to encourage attendance throughout the day. They monitored the success of this strategy through observations on their rounds of the facility.

As the clerks prepared the client folders, a re-usable colour coded numbered tag was attached to the folder. The colour referred to different services and was a way of directing and managing the movement of the folders, ensuring that they were taken to the correct service point. Over the years many of the number tags had been lost, so the actual number could not be used to keep track of the admission count. Remaining numbers were, however, still used in sequence, which meant that facility managers and staff members could use this information to ensure that clients were seen at the service point in the order of their arrival at reception. In a sub-district level innovation, all facilities were asked to implement a strategy to track the clients' progress through the facility. The time that a client was attended to at each service point was recorded, starting at reception.

Most clients passed through the *prep station* responsible for triaging clients, to identify emergency cases to be expedited through the system, taking temperatures on ill clients, weighing children, recording the presenting complaints and, most importantly managing the flow of clients by sorting and directing clients to appropriate service points. Vitamin A administration and de-worming of children was also undertaken at this point as per clinical protocols. The facility managers all included observations of the prep station on their early morning rounds, to ensure that it was open and working efficiently. One of the facility managers said she paid particular attention to the children at the prep station on a Monday morning. In her experience, there were often many sick children after the weekend. She said that in her community, people were reluctant to phone for an ambulance or to go to a twenty-four-hour service on the weekend, as they were often turned away. She therefore actively assessed the potential workload in the early morning Monday queue to see if the staff allocated to child health would cope, or whether she needed to redeploy more staff to the area, to deal quickly with urgent cases and to prevent congestion.

At all the facilities, fast track systems were in place, which bypassed either the reception or the prep station, however they differed slightly between facilities. They were valued as a way of reducing waiting times, and thus making the service more acceptable to chronic clients, where adherence was paramount (e.g. TB), or for preventative services (e.g. family planning and immunisation), where clients were typically not prepared to wait too long as they were not sick. The queue for reception could be bypassed if the folder was routinely kept in the consulting room (as was the case with TB services), or if the folder was drawn beforehand,

because the clients were expected for nutritional support, PMTCT and antenatal services. Clients could bypass the prep station if they were able to state the reason for their visit at reception, i.e., they did not need sorting done by the prep station, and if they did not need to be weighed or have their temperature taken or physical observation.

The facility managers valued their early morning rounds (undertaken at approximately 08h00), and further rounds (at about 10h00 and 14h00 on busy days if required), to identify points of congestion and delay:

*So it takes me to go around like even if it's twice or three times to see 'now where is the bottleneck?' (Index facility manager C, interview 1)*

Through informal observation, they saw whether queues were moving and where congestion built up: one manager said she recognised faces in the queues and therefore knew if the same clients were still waiting.irate clients, who felt that they had been waiting too long or who felt that other clients had got ahead in the queue, used this opportunity to make complaints. Although these complaints did not necessarily enter the formal complaint system, they were given high priority by all three index City Health facility managers. The clients were listened to and their particular problems investigated on-the-spot. Those facility managers who, by the time of the research, had implemented the recording of times that clients were seen at each service point, found this very useful information in understanding problems related to the flow of clients through the facility and in discussing them with the staff and with clients. Facility managers wanted to be seen as responsive to their clients. One facility manager said that, until clients saw the queue moving, their perception was that she had not done anything to manage the situation. She therefore made sure that there was some immediate visible change so that clients would understand that she was addressing the situation. In their management of flow problems, facility managers placed emphasis on addressing clients in congested waiting areas generally, to keep them informed of what was happening and why.

In addition to their rounds, the facility managers received information about flow problems from clerical staff, who observed flow problems as they carried folders from reception to the prep room or to the fast track service points. They also got reports from clinical staff who telephoned through to the office. It seemed the facility managers had invested differently in developing relationships that kept her up to date with flow problems: one relied heavily on

her clerks coming to speak to her if they identified a problem while distributing folders around the facility: “They are our eyes. They can see what is happening” (FacC\_obs3); another was seen to be more active in engaging with the clinicians, who readily phoned her.

Generally the first-level facility managers were very active in managing the flow problems, though local factors seem to influence just how active they were; these included: how full the facility was generally; whether excess staff capacity was available elsewhere in the facility that could be deployed to address the presenting flow problem; which service point/client group was being affected. Facility managers seemed less likely to intervene on-the-spot if the congestion was at child curative services, as this was expected to be busy all day, and it was not a sub-district priority for fast tracking. On one day of observation in a facility, when there were relatively few clients in the facility, one facility manager found a queue of ten sick children who had been waiting at the curative nurse’s door for over an hour and a half, while two urgent cases had delayed the only PN on duty; down the corridor, two PNs sat without work at their service points in the facility. She checked with the nurse on child curative duty, a very competent clinician, if she would cope with the number of children waiting, but did not consider the children’s waiting time to be a problem, and did not mobilise support from the two idle PNs. In contrast, she managed the waiting times of clients with sexually transmitted infections (STIs) much more active as this was a priority for fast tracking.

### **Larger facilities: the MDHS experience**

The second-level facility manager placed the same value as her first-level peers on doing a facility round in the mornings, to identify flow problems. On a Monday she started her day with a round at 06h30, to ensure that the facility had been cleaned and that the trauma unit had coped with the weekend work. She checked the queues and the pile of client folders waiting to be seen in the trauma unit, to see the client arrival times and how long clients had waited for triage and to be seen by a doctor. Every weekday, she did a round at 07h45 to check that the receptions, pharmacy and the prepping stations were all open and seeing clients; (on a Monday this was her second round of the day). She stopped to investigate and problem solve *on the spot*, if one of these points was not open. On the day she was observed, she did not check the ART section as she said that knew they were always open, and did not require specific monitoring.

In the index MDHS facility, a Help Desk was situated at the entrance, and was given the main responsibility of directing clients who did not know the system in the facility to the appropriate receptions or service points, which reduced unnecessary waiting time in the wrong queues. They also initiated a fast tracking process for all clients over 70 years, who were given a slip which allowed them to attend a fast track queue at reception, OPD and the pharmacy. The help desk was open from 06h30 to 15h30. It was staffed by two clerks, one starting at 06h30 and the other at 08h00. The HODs carried the responsibility of managing congestion and long waiting times in their departments. They were expected to report on problems that had arisen, and progress in managing them, at the weekly Monday HOD meeting which ran from 08h30 to 10h00. The Operational Manager was the HOD in charge of the main OPD, and was responsible for ensuring the flow through OPD, liaising closely with the staff in the prep station. The facility manager also kept her eye on this when she did her rounds. Prep room staff were expected to walk down the OPD corridors regularly to check that the queues were moving in front of all the consulting rooms:

*(The Operational Manager) has to communicate with the prep-room staff, but from time to time any one of us will just go in. Like this morning when I went that side I found out the disability grant doctor never pitched up and the patients were still waiting ... What we've done we've asked the prep-room staff not to just be in the prep-room. When they send the patients ... they still need to go and make a follow-up: is the queue moving there? Because sometimes the patients will be sitting outside and then there is no one inside or the doctor was half day, you know. (Index facility manager D, interview 4)*

Some of the flow problems in specialised departments required discipline-specific technical knowledge. The facility manager had, for example, called on the substructure office to assist in investigating and advising her on practice in the pharmacy:

*I've checked and I've also called (the deputy director for pharmaceutical services) from the substructure for pharmacies, because I said to him I need someone who knows what is going on in the pharmacy to help me, because I might be observing the wrong thing, because I said to him I'm not sure if the staff at pharmacy are working according to how they are supposed to ... For instance, in an hour how many patients can the pharmacy process, how many scripts can the pharmacy process? (Index facility manager D, interview 2)*

Based on the advice received, the facility manager requested the facility's HOD for Pharmacy to institute a system to monitor this. Substructure programme staff were also called on to help establish efficient systems in the ART section.

The facility manager had participated in the development and implementation of larger system changes in the facility. For example, prior to the commencement of this research in 2008, the facility manager and the Family Physician worked with outside consultants to address chronic severe congestion at the reception and the pharmacy, using a particular methodology of process engineering (LEAN<sup>42</sup>), which focused on enhancing efficiency by improving the use of space and streamlining work (Isaacs & Hellenberg, 2009). Some of the interventions could be implemented immediately (reorganisation of existing space and work practices), but some required structural changes which were thwarted by slow procurement processes in the substructure office. For example, using the LEAN principles in the reception, a system was developed which required clients to be given a number related to a specific reception window and for their folders to be filed in a row of shelving behind the window. Two clerks were then assigned to each reception window and were fully responsible for drawing, filing and managing the folders in their row, which improved the filing practices and reduced client waiting times considerably. At the time of this research, the system was no longer working efficiently, as the numbers of folders had grown beyond what could be accommodated on the existing shelving, and so additional piles of folders had been created throughout the reception area where space was available. More shelving had been ordered but there was a delay of over three years before it was installed. When the new shelving was installed, it was accommodated to the side of the reception windows, which meant that clerks had to criss-cross the room again in drawing folders, rather than working in a line behind them. Ideally the existing rows of shelving should have been lengthened but this required a structural change to the building which the facility manager knew would take even longer to obtain.

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<sup>42</sup> LEAN is term coined by Jim Womack in the 1980s to describe Toyota's business model. It has developed into a business approach which seeks to maximise customer value while minimising waste. The LEAN approach promotes a particular set of principles and methods to achieve this.

### 6.3.3 Staff workload performance

#### The experience of small and large index facilities

In the smaller City Health facilities, the index facility managers suspected certain staff members to be slow workers when, on doing the rounds of the facility, they observed a particular queue was moving slowly, or when other staff members complained that they were having to take on a greater share of the workload, because another colleague was working too slowly. They all had a sense of how many clients should be seen per hour at a particular service point, which was used to judge whether the client flow through the service points was acceptable or not:

*... the clerk, the PN should see at least 40 clients on average per day. So that's 20 minutes per client including your lunch to make your day full. Obviously in curative you will get your long cases but then you also get your short cases so they averaged it. So then we're looking at the client or PN seeing at least five clients within that hour. (Index facility manager A, interview 2)*

On investigating work productivity, the City Health facility managers were able to draw an individual staff member workload report from Prehmis. To avoid allegations from staff, of being treated differently or persecuted, they drew this workload report for all staff members in the same category for comparison. This was not done on a regular basis, only when there was a concern that a staff member was not sufficiently productive. At times these reports were not accurate; the range of mistakes that could occur are described under Validation of Statistics in Chapter 7 - Findings: Managing Programmes Priorities; the results were then validated against data collected in a parallel information collection system, whereby clinical staff kept a service point worksheet and recorded the client's sticker, diagnosis and services given; the attending staff member could be identified from their handwriting. If low productivity was confirmed in relation to workload norms, then the facility managers addressed the problem in much the same way as they dealt with high absenteeism with individual staff members. Informal counselling was done, which was recorded in the communication book; the evidence was thus to some extent formalised. The staff member was then monitored and if there was not an improvement, at some point (based on the facility manager's assessment of the situation), the facility manager instituted a formal counselling session. This was used to communicate the assessment of her speed of work to the staff

member compared to workload norms, in order to identify the cause of slow work, to identify what support the staff member might require and to agree on a time period over which the performance would be monitored. Failure to improve after supportive action then resulted in an *incapacity hearing*.

In both organisations, staff had the perception that they were overworked, which was not supported by the workload data from the routine monthly report<sup>43</sup> (RMR). The City Health facility managers were able to challenge this perception by using data in the Prehmis report and the service point worksheets:

*They are saying they are overworked, that is one of, that is why we have a report to show you. I actually started a process of calling in the PNs... I showed (one PN) that she's only seeing on average 10 to 15 clients a day. And then she said to me 'No Sister it can't be'. So I said to her, 'But this (report) gives all services... it's telling me that you are assisting (at other service points) where you can, but you are only seeing about 15 clients on average a day, which is not good enough.'* (Index facility manager A, interview 2)

In the index MDHS facility, the responsibility of identifying and managing low productivity was delegated to the HODs:

*[T]he team leader needs to check if people are still doing what they are supposed to do or you are just on duty. So everybody has got to have been allocated duties and say, for instance, in the pharmacy we say in one hour you should have seen twenty scripts or whatever, things like that ... So that is what (the pharmacist) is supposed to do, monitor.* (Index facility manager D, interview 2)

The index MDHS facility manager did however remain observant of the productivity, particularly related to starting times:

*Also they don't all start at the same time. Some start work immediately but others first drink tea. The staff members don't like it when I say that I am looking at the output rather than just their presence.* (Index facility manager D, interview 4)

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<sup>43</sup> A report generated by the City Health and provincial software which manages PHC client data

Unlike City Health, in the MDHS index facility, no reports were available from the electronic database to investigate individual staff member's performance, and the collated workload data in the RHIS was seen as unreliable.

#### **6.3.4 Allocation of work**

##### **First-level managers: the City Health experience**

Generally the smaller City Health facilities had at least two clerks who were responsible for opening new folders, drawing existing folders, managing the folder system, capturing data at the end of the visit and re-filing the folders. When the reception was short staffed, or if there was a backlog of data capture or folder re-filing to be done, then an ENA was deployed to assist for a half-day or a day. When there was congestion of clients waiting to be seen in reception, with insufficient clients being fed through to the clinical service points, additional staff would be deployed to the reception area for brief periods (e.g. 30 minutes); while this would typically be an ENA or EN, one facility manager would use any category of staff that was underutilised at that time. She herself assisted in reception as she placed a high priority on establishing and maintaining an efficient flow of folders through to the clinical staff.

Facility managers differed in how they staffed the prep station: some used only ENAs and ENs while others also allocated a PN to work with an ENA. In part, this decision was based on the experience that the facility managers had working with different staffing configurations. One facility manager used a PN at the prep station because of her prior experience working as a PN in a larger facility in the sub-district; she believed that triaging was best done by a more senior staff member and that a PN could also work faster in attending to minor ailments which would reduce the congestion in the facility considerably. Initially she experienced a lot of resistance from the PNs in trying to introduce this system, which she attributed to their reluctance to leave their consulting rooms, which they associated with a certain ownership and status, for the open prep station.

Facility managers organised service delivery into specific service points with designated services (such as family planning, STI treatment, child curative). In part, this was to allow for fast tracking of services which is in line with the City Health priorities. Most facility managers allocated portfolios to staff members (requiring them to cover particular sets of

services); some drew up rosters every quarter, others allowed the allocation to run for longer periods up to a year. One manager had a meeting every Monday to revise her staff allocation plan for the week taking into account who was absent as a result of leave, sickness or training. Allocation of staff to service points depended largely on the scope of practice as authorised by professional bodies and staff's training. This created pressure on the facility managers to ensure that staff in the clinical cadres were trained as fully as possible, so that they could be allocated freely between service points to maximise efficiency as the need arose. Facility managers also rotated staff through service points specifically to gain experience or to remain up-to-date in all services, though the frequency of these rotations varied from annually to every few months.

When the facilities were short-staffed, the facility managers' main priority was to allocate services to maximise immediate efficiency as opposed to longer-term efficiency, with all staff being able to work at all service points as far as their scope of practice allowed. They allocated services and combined services to suit the strengths of individual staff members, as well as their scope of practice. This required knowledge of the individual staff member's competencies, speed of work and their ability to work under pressure and independently in delivering various services. This was also all assessed relative to other peers, so that the facility manager allocated services to the staff on duty to ensure that their various strengths were maximised across the team.

*[S]he is actually by profession a CNP ... so she has got that advantage as well. She can prioritise, she can prioritise very well and she works very fast while doing everything - IMCI and everything. (Index facility manager C, interview 2)*

*You know that so-and-so can handle pressure in that area so I can [allocate] that person there. (Index facility manager D, MDHS workshop 2)*

From experience, facility managers knew how much "stretch" staff or processes could cope with when short-staffed. For example, one facility manager learnt that she did not have to replace her TB ENA if she was on leave, because when the previous ENA working in TB resigned earlier in the year, the TB service point had been able to manage for five months until a replacement was appointed. It was only on the day that there was a doctor TB session that the addition of an ENA was essential.

Some facility managers drew on the knowledge of her staff in deciding how best to allocate work when the facility was very short-staffed:

*I would call in the PNs and plan together, because sometimes, since they are the ones that are doing the work, they know best for what can be done. So I was going to say, 'Guys this is the situation: ... we are short with three people. I'm going to try and phone for additional staff but what are we going to do in the meantime?' (Index facility manager C, interview 4)*

Two of the three index City Health facility managers were successful in re-allocating staff throughout the day, to where the client need was. The third facility manager, who struggled to get staff to move between service points, noted that there was considerable stress within the staff complement and between her and certain staff members, which resulted in poor team work, which undermined her attempts to move staff as needed. Other facility managers in the City Health peer group noted that the practice of allocating portfolios to staff was sometimes misinterpreted by staff to mean that they were responsible for these services only, leading to them resisting taking on any other services when short-staffed. This worked against a team approach and had to be challenged. The allocation of work was not just a technical decision that could be made based on client need; it took into consideration the individual strengths of staff, as well as the work climate and the openness to team work. Facility managers had to assess how the work allocation would impact on the longer-term staff morale and the working climate.

### **Second-level managers: the MDHS experience**

In the larger facility, the second-level facility manager was far removed from the decisions on work allocation. Work allocation in the 24 hour service was complicated by shift systems to cover night and weekend work. The Clinical Manager and Operational Manager were respectively responsible for drawing up and managing a set of duty rosters, covering day, extended hours, trauma at night and over weekends for doctors and CNPS, and PNs respectively. The facility manager became involved when there was a decision to make, about using locum staff to cover the night trauma calls, as this had a cost implication and she oversaw the facility budget. Her objective here was to manage the use of locums to remain within budget. She was also involved when work allocation issues crossed two departments,

such as when ART doctors resisted working in the OPD section, and when staff resisted the decisions made by their HODs, such as when CNPs, once qualified, did not want to work after-hours.

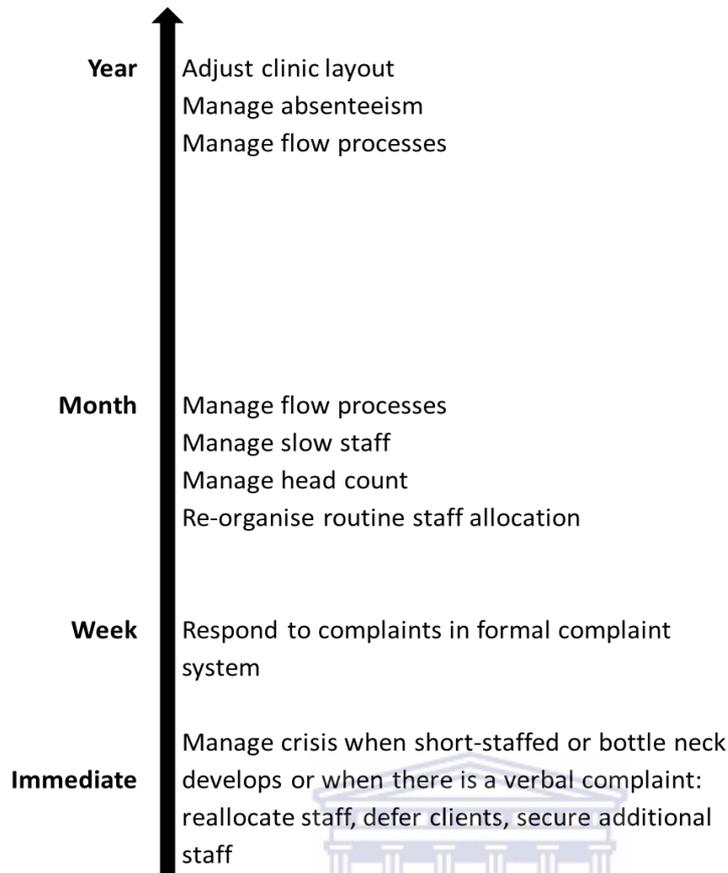
### 6.3.5 Time as a dimension shaping the key decisions in the four focal areas of decision-making

The main issues observed in this research, which shaped the four key management foci, varied across time-horizons.

**Table 6.1. How decisions across the focal areas differed with time horizons**

Decision area	Immediate	Medium or longer term
<b>Client intake</b>	<ul style="list-style-type: none"> <li>Assessing whether sufficient numbers of staff on duty in relation to the routine service delivery requirements (with outreach and campaign responsibilities).</li> <li>Deciding when to request additional staff.</li> <li>Deciding when and how to implement the deferment policy on busy days.</li> </ul>	<ul style="list-style-type: none"> <li>Deciding how to staff the prep and triage points</li> <li>Designing and implementing routine intake and appointment systems and processes</li> <li>Managing intake and deferral to meet workload norms, ensure sufficient utilisation and meet programme coverage targets</li> </ul>
<b>Client flow</b>	<ul style="list-style-type: none"> <li>Identifying flow problems, including congestion, bottlenecks, prolonged waiting times and slow staff performance.</li> <li>Investigating, strategising, implementing and monitoring interventions to manage flow problems.</li> </ul>	<ul style="list-style-type: none"> <li>Designing and implementing service organisation, including fast tracks, with attention to processes and use of space</li> </ul>
<b>Staff workload performance</b>	<ul style="list-style-type: none"> <li>Identifying staff who worked slowly</li> </ul>	<ul style="list-style-type: none"> <li>Managing individual staff with low productivity</li> </ul>
<b>Work allocation</b>	<ul style="list-style-type: none"> <li>Assessing and managing the work allocation to maximise service delivery when facility was busy</li> </ul>	<ul style="list-style-type: none"> <li>Negotiating professional hierarchies and practices</li> <li>Managing routine work allocation to ensure system efficiency and to ensure that all staff were skilled</li> <li>Remaining within budget on locum staff.</li> </ul>

Importantly, the issues which required immediate attention were significantly different from those with which facility managers dealt over the medium or longer term, with different sets of objectives across time. As shown in Table 6.1, problems in client intake manifested both as immediate problems requiring immediate decisions on when and how to intervene with additional staff, or deferment of clients, as well as longer term problems requiring attention to routine process design. Immediate decisions were often made in a mode of crisis management. The main management objectives varied too; the immediate required management to ensure that the client demand (those admitted requiring services) did not exceed the staff capacity to deliver services; the longer term objective was to protect staff morale, to improve process efficiency to maximise service utilisation, and reach programme targets, and to be seen to be responsive to building community needs so as to build trust in the relationship. Similarly the management of client flow manifested as problems such as congestion and long waiting times, which needed to be resolved urgently on-the-spot (in particular because of the emphasis in both organisations on improving the client experience and being responsive to complaints); however, over time, these issues also required attention to system design, so that they could be avoided. The management of work productivity was more to do with allocation of work to maximise service delivery when there was an immediate problem, and with work allocation to ensure efficient use of staff according to scope of practice; it was also instrumental in maintaining skills levels across programmes in the medium term. Management of poorly performing staff was also more of a long term management objective. The decisions are mapped out on a timeline in Figure 6.1.



**Figure 6.1. Key decisions represented on a time line**

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## **6.4 Use of formal information in managing efficiency of service delivery**

The formal HIS collected and presented a number of data elements and indicators, which could be used in managing client intake and flow and work allocation over the medium to longer term. These were collected and monitored using the RMR and the client satisfaction survey; both databases were housed within the DHIS. The RMR elements on workload and head count were considered to be less reliable than the programme elements, possibly because the latter benefited from more technical support from sub-district/substructure programme staff. The City Health data capture software also allowed for the routine capture of the names of the clinicians who attended to each client. This made individual staff member workload reports possible. Other formal information was captured in a periodic Waiting Time Survey (WTS), and the formal complaint system. Facility managers had also implemented a strategy to generate objective information on individual client waiting times by requiring staff to

record in the client folder, the time they were attended to at each service point. This is summarised in Table 6.2.

**Table 6.2. Formal data relevant to improving the efficiency of service delivery**

Source	Data	Use
<b>The Routine Monthly Report</b>	<ul style="list-style-type: none"> <li>RMR head count and workload targets</li> </ul>	<ul style="list-style-type: none"> <li>Not actively used in Plan-Do-Review (PDR)</li> <li>Used in one-on-one facility manager supervision and when staff complain that they were overworked</li> </ul>
<b>Prehmis</b>	<ul style="list-style-type: none"> <li>Workload of individual staff member</li> </ul>	<ul style="list-style-type: none"> <li>Useful in confirming and monitoring individual low work performance</li> </ul>
<b>Formal complaint system</b>	<ul style="list-style-type: none"> <li>Verbal and written complaints</li> </ul>	<ul style="list-style-type: none"> <li>System was able to categorise and summarise complaints</li> <li>Time to respond and to resolve was monitored</li> <li>Executive Director drew a monthly report and a summary was presented at HMT for discussion by the sub-district managers</li> </ul>
<b>City-wide Client satisfaction surveys</b>	<ul style="list-style-type: none"> <li>Disaggregated to sub-district</li> </ul>	<ul style="list-style-type: none"> <li>Identified main complaints</li> </ul>
<b>The Waiting Time Survey</b>	<ul style="list-style-type: none"> <li>Service time</li> <li>Waiting time</li> </ul>	<ul style="list-style-type: none"> <li>Identified client arrival time patterns, amount of waiting and service times, congestion, inefficiencies in service provisions, logistical problems, flow problems</li> </ul>
<b>Client folder</b>	<ul style="list-style-type: none"> <li>Record of time seen at each service point</li> </ul>	<ul style="list-style-type: none"> <li>Waiting times</li> </ul>

### **The Routine Monthly Report**

Headcount and workload data was collected routinely and reported on monthly. The workload data was not seen as reliable enough for decision-making, but the headcount data, though also troubled with inaccuracies, was used cautiously in the monthly and quarterly PDR processes at substructure and district level. Facility managers actively managed their services towards meeting the RMR head count target, to increase service utilisation (as a measure of adequacy of client access). In the PDR meetings, they also used the total headcounts to compare staff productivity in their facility against other similarly-sized facilities. They further compared the head count to their informal observations of how busy

the facility had been over the month, to assess broadly whether data capture was complete:

*Now this month we also had [a headcount of] 3000, but I know we were quiet this month ... There was quite a few days when we hardly had clients in curative; family planning was also not very busy, so yes. (Index facility manager A, interview 2)*

The headcount indicators were used periodically at the sub-district/substructure level when reviewing staff allocation between facilities. They were evaluated together with the TB caseload, ART caseload and HIV positivity rate, to assess the fairness of the distribution of staff between facilities and to inform re-allocation of staff. Facility managers therefore tracked headcount keenly as it affected their staffing levels, and they used headcount data to motivate staff to increase productivity. This was done in staff meetings. Workload indicators were not monitored as part of the monthly and quarterly PDR processes. Facility managers reported that staff found these indicators contentious, as they did not reflect all the work done; staff felt these indicators undervalued important aspects of their work.

### **The formal complaint system**

Most complaints were made informally by clients complaining directly to staff, HODs or the facility manager as they moved through the facility, or by clients making use of the open door policy to approach the facility manager or HOD in their offices. In City Health there was an attempt to formalise these complaints by requiring the staff to note verbal complaints on an electronic database. Facility managers in both organisations took complaints very seriously, motivating staff to take a proactive stance in reducing complaints (e.g. by communicating frequently with clients when waiting times were increased) and to deal courteously and responsively with clients when complaints were made. The priority given to complaints was seen in how facility managers were excused, even from sub-district/substructure management meetings, to attend on-the-spot to verbal and formal complaints that had been made in their facilities.

In both organisations, the most frequent complaints were long waiting times and poor staff attitudes. The nature of complaints, the response and times to resolution were discussed in staff meetings and HOD meetings. In the index MDHS facility, time in HOD meetings was even given to how potential complaints were averted in the handling of clients. Facility managers used the information from the complaints system to challenge organisational

culture and values, arguing for client-centred and responsive service delivery in line with the new organisational vision promoted in the district and sub-district/substructure.

### **Client satisfaction surveys**

Client satisfaction surveys were supposed to be conducted annually in MDHS and bi-annually in City Health. During the time of this research, none of the index facilities kept to this schedule. Largely the results confirmed what facility managers already knew, that long waiting times was an important cause of dissatisfaction. Results were discussed at the staff meeting and HOD meetings, and facility managers again used this to address the manifestation of organisational values in their facilities.

### **The Waiting Time Survey (WTS)**

Although the last WTS was done in 2011 and preceded the time of observation in this research (2012/2013), the results were still being discussed in the City Health monthly management meetings during the study period, and so are included. While only a few facilities had participated in the 2011 WTS, they had been chosen to represent the various size and types of facilities in the sub-district, and all City Health facility managers were therefore tasked by the sub-district manager with updating their facility action plans, to reduce waiting times, based on the 2011 WTS sample of facilities. Two major process innovations had been introduced at district level in prior years, which could be traced to the Waiting Time Surveys. The first was the introduction of an early starting time for at least one clerk and one ENA at 07h30, to ensure that clients were ready to be seen (with folders drawn and preliminary observations done by clinical staff) when consultations started at 08h00. The second was an attempt to reschedule repeat visits for the afternoon, so as to spread the client load throughout the day, and reduce congestion at particular times (especially early mornings) and consequent long waiting times. Facility managers used the information in the 2011 WTS to identify particular service points where there were long waiting times, and to understand the cause of these problems (e.g. equipment not available, service time too long, not sufficient staff at the service point). The WTS created awareness around different types of flow problems, and provided facility managers with a common language to speak and think about the flow problems collectively, and with their staff.

## 6.5 Use of informal information in managing efficiency of service delivery

In both small and large facilities, the main information type used by facility managers to manage immediate problems of client intake and flow and staff productivity was informal information, collected predominantly through on-the-spot observations on rounds, reports from staff, or informal complaints from clients. First-level facility managers managed this directly and often required detailed up-to-the-minute information in their decision-making. Second-level managers often worked more with reports from their HODs and staff, but they too did rounds to see for themselves what the problems were and to observe processes and staff at work. It would seem that the rich information that can only be gained by personal observation was required in the detection of and immediate management of efficiency of service delivery, and that this had no substitute:

*Doing rounds ... when it is very busy you hardly get to the end where you wanted to get to because at all points there are people stopping you, they are asking questions, there are things that you are noticing: the BP machine is not working, the thermometers are not enough in the prep room or whatever. So those are the things that will keep you, so you were actually not doing the equipment audit but you end up doing it because you see now there are long queues because people are not moving; they can't actually get their blood pressures done because there is only one blood pressure machine working instead of four. And the other three are standing there not functioning, but the staff did not send them for repairs. You receive information from the staff that are actually working in those points. You have conversations with the staff and the HODs in those different points. (Index facility manager, MDHS workshop 2)*

*But if you are there around them and walking around and observing what is happening, you are there to see them and you are taking the rounds and seeing is it really a busy day, the work load and addressing people so that you hear from their point of view, ... even the patients to hear from them what do they want, what are their expectations? (Index facility manager, MDHS workshop 2)*

Even in the formal HOD meetings, observational information was highly valued. The index MDHS facility manager often responded to reports from her HODs with her own on-site observations of the relevant department.

In managing client intake, first-level managers observed whether procedures were being followed (e.g. giving of appointment times) and the number of clients in waiting rooms, or folders at service points, waiting to be seen. In managing flow, they observed where congestion developed and how long clients were kept waiting (either recognising faces still waiting in the queues or using the times recorded in the folders at each service point). They heard directly from clients:

*They're easy to come and knock on the door and tell me. In this community they don't believe in writing notes, they believe in face to face contact, and screaming and shouting or I have to hear from the staff, this one was complaining or whatever.*  
(Index facility manager A, interview 1)

In identifying slow working staff, they saw which queues were moving slowly and investigated why. On-the-spot problem solving involved observing and speaking to staff, and speaking to clients so as to understand the cause and nature of the problem, and identify immediate solutions.

In the absence of formal appointment systems, the first-level facility managers used observations on daily rounds to collect the information required to assess the workload, and to decide when to consider deferring clients. Observations were also used to monitor whether staff were implementing strategies to improve and streamline the intake of clients. In the large index MDHS facility which had a formal appointment system, the facility manager relied on reports from her HODs and staff, when problems arose. It was the breakdown of informal information exchange that meant that, during the time of observation, the facility manager did not know that the waiting time for a next appointment was unacceptably long.

## 6.6 Role of experience and knowledge in managing efficiency of service delivery

In this case, experience in working with the procedures and processes was of paramount importance and generated applied knowledge which informed decision-making needed for problem solving:

*Thinking out of the box on-the-spot wherever you have to solve a problem or whatever. Many things are not written in the book but it's things that you gain by gaining experience that you can actually say 'I can do this'. (Facility manager, workshop 2)*

In both organisations facility managers spoke of trying different strategies to improve client flow when working with different numbers and cadre of staff in different situations (such as with different client demand determined by different days of the week, time of the month or seasons). These different situations enabled them to learn how best to manage intake and flow and allocation of work. They received immediate feedback on the success of each attempt in observing how staff coped and whether clients were satisfied. Some reported that they were blocked in this form of experimentation and learning: their attempts to move staff between service points was met by resistance from staff members who saw their allocated responsibility to be fixed, or who were reluctant to work as a team.

Experience was discussed in meetings with peers, either formally (e.g. in the monthly management meeting if the agenda allowed) or informally (e.g. while waiting for meetings to begin or over tea) and was valued:

*When you come from the meetings, even here (substructure office) you take from (another facility): 'Oh, this is how they are solving this problem', so I can actually try and use that information to solve my problem that I have identified at (my facility) or wherever. (Peer facility manager, MDHS workshop 2)*

There was evidence of collective learning, sometimes within routine meetings like the sub-district/substructure management meeting. For example, the information from the WTS was discussed in the monthly management meetings and became part of the collective learning in the sub-district/substructure. The reports for specific to each individual facility but the problems and possible solutions were fairly generic. The discussion allowed facility

managers to understand (and thus acquire knowledge) about the sorts of flow problems that could arise and how to approach problem solving.

To understand the problems in the existing procedures and processes for client intake and flow, facility managers not only observed (thereby gathering information) but also applied the information in a manner that generated insights into what was wrong and what could be improved. This required them to draw on their experience and applied know-how regarding how procedures and processes worked in their facilities. For example, it was not sufficient to only know *about* the deferral procedure; facility managers also needed to understand *how* to apply it. In understanding the procedures and processes, they also developed causal knowledge – understanding why the system worked as it did. For example, they knew that, *if* they addressed the waiting room to say that the facility could not cope with the demand for services that day, and clients would be assessed for deferral, *then* many clients would leave at that point without going through the time-consuming official process of deferral. They knew that these clients who self-selected to leave were non-urgent; (serious ill clients would stay as they needed the service that day) and this saved staff time in not having to open folders and do assessments. They also understood how different stages in the client flow through the facility were linked, e.g. how congestion at the prepping station would impact on waiting times, and result in inefficiency at subsequent service points where staff might end up idle while they waited for clients to be sent through from the prepping station. This causal knowledge enabled facility managers to intervene to improve the processes (e.g. to streamline procedures at the prepping station to reduce time taken per client, and to redeploy clinical staff to help in the prep room when they were otherwise waiting for clients at their service points). Causal knowledge was also needed in the design, implementation and improvement of appointment systems, triage and deferment procedures and fast tracks in their facility.

Facility managers developed conditional knowledge in understanding how the processes worked under various circumstances; this meant that they could adapt and fine-tune the processes under particular conditions. For example, one facility manager used her local knowledge about her community (they did not easily negotiate ambulances and emergency services) to anticipate that there would be many sick children on a Monday, requiring extra vigilance in triaging the queue of children waiting to be seen by child curative services. The use of conditional knowledge was also seen in how the facility managers allocated work on

busy days. They used their knowledge of the individual staff member’s competencies, speed of work and their ability to work under stress, all relative to other peers, to ensure that their various strengths were maximised across the team. This knowledge of who worked well under what conditions was conditional knowledge.

Table 6.3 identifies the role of knowledge in some of the key decisions made by facility managers in managing client intake and flow, and work allocation. Knowledge was important both in the immediate and medium to longer term. Conditional knowledge was particularly useful in adapting on-the-spot in relation to an immediate problem. Causal knowledge was very useful in understanding why a problem would arise and avoiding it.

**Table 6.3. Knowledge used in some of the key decisions in managing efficiency of service delivery**

<b>Decision</b>	<b>Information used</b>
<b>Is the workload too much for the staff?</b>	<ul style="list-style-type: none"> <li>• Knowledge of how to use workload norms</li> <li>• Anticipated further intake (local know-about, attuned to weekly and diurnal variation)</li> <li>• Know-how to motivate and support staff on busy days</li> </ul>
<b>Should the deferment policy be implemented?</b>	<ul style="list-style-type: none"> <li>• Know-about the deferment policy content and intention</li> <li>• Know-about priority programmes, staff and client values</li> <li>• Know-how to implement policy balancing programme priorities, staff and client perspective</li> <li>• Know-when to adjust the timing of instituting policy</li> </ul>
<b>Is intake and flow efficient?</b>	<ul style="list-style-type: none"> <li>• Know-how the procedures and processes work</li> <li>• Know-why on how the steps in processes impact on each other</li> <li>• Know-when to expect variation in intake and flow</li> <li>• Know-why and know-when to improve intake and flow</li> </ul>
<b>How best to allocate work to maximise efficiency and quality?</b>	<ul style="list-style-type: none"> <li>• Knowledge of the particular staff on duty and how they worked under stress: their competence (know-about), their resilience (know-when), how they had coped before under similar circumstances (know-when), knowledge (know-how and know-when) of what staff wanted from their manager in order to give of their best when they were under pressure</li> <li>• Know-how and know-when to combine the strengths of the team</li> </ul>
<b>Which operational goals to manage towards?</b>	<ul style="list-style-type: none"> <li>• Knowing how perceived high workload and how it was managed would impact on the longer-term staff morale and the working climate (know-when)</li> <li>• Know-how and know-when deferment would impact on longer-term relationship with community and trust</li> <li>• Know-how and know-when to balance managing to reach headcount and programme output targets versus managing to promote staff morale and work place climate</li> </ul>

## **6.7 How formal and informal information and knowledge were used together in decision-making**

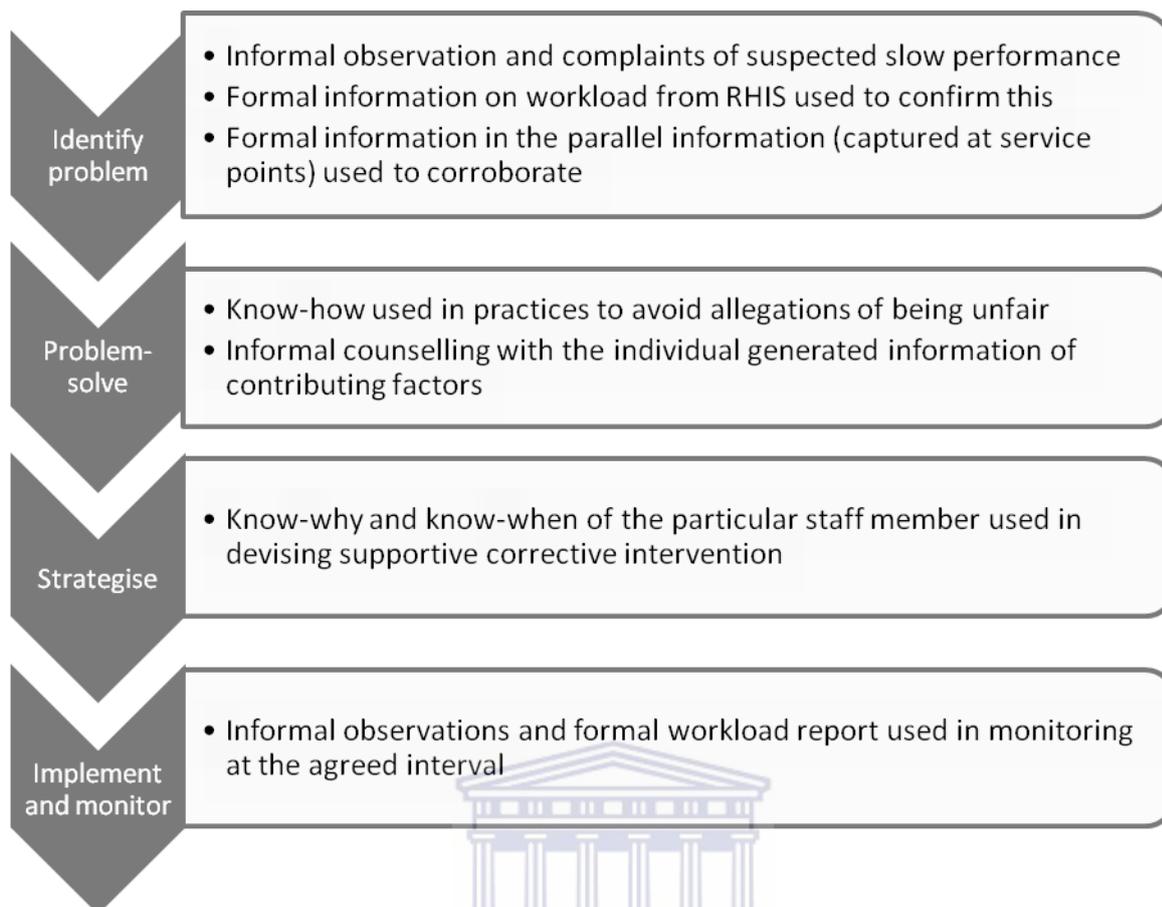
Throughout this case, there were numerous examples of formal and informal information working together. Informal information was often required in addition to formal information, and had a particularly significant role to play when the problem required immediate, on-the-spot decision-making, or when formal systems were not reliable. For example, the intake of clients in the large MDHS facility, which was largely delegated to the Clinical Manager, required formal information from the appointment system (number of clients booked and number of “no shows” for appointments) as well as a count of staff on duty. In addition it required technical know-how of how to use this information in the application of staff workload norms, and also an understanding of how the triage and deferment systems worked. The facility manager needed to know that client access to services was acceptable, which could be deduced from the time to the next available appointment, but relied on ad hoc reporting of this from the clinical manager. For the system to work, her real information need was an informal one: to know if she could rely on her delegated representative to inform her when there was a problem, or whether she had to institute her own systematic checks.

Table 6.4 shows how informal and formal information sources became available at different times. Thus while observations immediately identified current flow problems, routine workload data were only available monthly. A client complaint lodged with the formal complaint system came to the facility manager’s attention and required resolution within a few days, whereas a client satisfaction survey was done on a yearly basis (and the Waiting Time Survey was only done every few years). Different information was thus available at different times, influencing what information the facility manager had available to use, and determining which problems could be identified.

**Table 6.4. Time scales at which information was available to identify problems**

	<b>Time scales</b>	<b>Information source</b>	<b>Problem identification</b>
<b>Informal information</b>	<b>Immediate</b>	<ul style="list-style-type: none"> <li>• Observation walking through the facility</li> <li>• Informal complaints from clients of long waiting times and getting lost in the service</li> <li>• Crisis report from reception or clinical staff</li> <li>• Times noted in clients' folder at each service point</li> </ul>	<ul style="list-style-type: none"> <li>• Congestion in facility</li> <li>• Bottle necks at particular service points</li> <li>• Unacceptable waiting times</li> <li>• Dissatisfied clients</li> </ul>
		<ul style="list-style-type: none"> <li>• Staff phoning in sick</li> </ul>	<ul style="list-style-type: none"> <li>• Greater than usual demand for services</li> <li>• Staff shortage</li> </ul>
<b>Formal information</b>	<b>Day</b>	<ul style="list-style-type: none"> <li>• Formal complaint through the complaint system that waiting times were long</li> </ul>	<ul style="list-style-type: none"> <li>• Dissatisfied clients and flow problems</li> </ul>
	<b>Mid-term - approximating monthly or quarterly</b>	<ul style="list-style-type: none"> <li>• Head count from RMR</li> </ul>	<ul style="list-style-type: none"> <li>• Headcount not meeting targets</li> </ul>
		<ul style="list-style-type: none"> <li>• Workload indicators from RMR</li> </ul>	<ul style="list-style-type: none"> <li>• Information not reliable enough for use</li> </ul>
<b>Longer-term, approximating annual</b>	<ul style="list-style-type: none"> <li>• Waiting time survey</li> <li>• Client satisfaction survey</li> </ul>	<ul style="list-style-type: none"> <li>• Process inefficiencies</li> <li>• Staff not working efficiency, not spending sufficient time in client contact</li> </ul>	

One example, managing work productivity, is given to describe how the use of formal and informal information and knowledge was often intertwined in decision making, and is illustrated in Figure 6.2. In City Health, facility managers were alerted to certain staff working slowly by complaints from other staff members or by their observations of certain queues moving slowly (informal information combined with knowledge of what performance should be expected at a particular service point, at a particular time, by staff of a particular cadre with particular training and experience). They then confirmed low productivity by drawing a set of workload reports from the formal RHIS (formal information). They demonstrated know-how in doing so: they had learnt to avoid allegations of unfair treatment by drawing a set of reports rather than only that of the suspected poor performer. They had generated this collective experience-based knowledge by discussing good practice at their monthly management meetings. They then managed the staff member by using the very particular knowledge they had of the staff members' competences and weaknesses, to develop appropriate supportive interventions; they monitored informally by stopping by to check practice and occasionally by drawing further workload reports.



**Figure 6.2. How the use of formal and informal information and knowledge was often intertwined in decision-making**

## 6.8 Influence of health system context

### 6.8.1 Governance and leadership

The national policy environment - through the *Policy on Quality in Health Care for South Africa* (Department of Health, 2007) and the *National Core Standards for Health Establishments*, and supported by the provincial vision in *Healthcare 2030 The Road to Wellness (draft)* (Western Cape Department of Health, 2013) - sought to re-orientate the health system to be responsive to client needs and expectations. It required active management of client complaints: the improved complaint system had been implemented with clear expectations that action would be taken to address the problem, clients would be kept informed of the progress, and response times would be monitored. This was driven and

monitored by the National Department of Health, through the provincial health departments. Both the district and the sub-district/substructure were acutely aware of their governance mandate in implementing this system, and modelled the importance of responding to complaints immediately in their own practice. In the index MDHS facility, a task team was convened which met fortnightly to review how all formal complaints were being handled. In the HOD meetings time was given to reports on how HODs had responded to irate clients so as to avoid complaints.

Long waiting times were one of the main complaints made by clients attending facilities. This meant that the management of efficiency of service delivery was a management priority in facilities. The emphasis on being responsive to clients impacted the information that facility managers used, influencing them to pay attention to client complaints (both formal and informal). The information from the WTS was seen as valuable in periodically informing process flow design. In addition, facility managers felt they needed ongoing current information to manage ongoing waiting time complaints, and sought to generate information by requiring staff to record the times clients were seen at each service point in their facility.

The target-orientation (discussed in more detail in the case on managing programmes) also influenced what information facility managers used. Workload was used to calculate utilisations rates and was monitored in PDR meetings at sub-district/substructure and district level. Facility managers paid this some attention, but found that it was a medium term objective which fell away daily on account of the immediate pressure they faced, particularly in MDHS, which was to cope with the client demand (often with reduced staff capacity due to high absenteeism rates). The target-orientation was experienced as unhelpful and not attuned with the daily realities of their work:

*Then there are targets that you have to meet on top of everything that is going on there in the facility; you still have to see that certain targets are being met. (Index facility manager, MDHS workshop 2)*

The management of client intake in the index MDHS facility shows how knowledge about organisationally-endorsed hierarchies constrained the decisions made by the facility manager. She observed her facility's clinicians leave before the end of the working day, yet she felt constrained in acting to discipline them as she had to work through the Family Physician as her HOD in-charge of the clinicians; she also found it difficult to negotiate the professional

hierarchy created by virtue of her professional background as a nurse and his as a doctor. While the substructure office supported her in interpreting her management authority as being over all staff cadres, in practice it valued professional hierarchies alongside management hierarchies. In the facility manager's experience, doctors were highly esteemed in the organisation and had a strong professional power-base; the substructure did not hold Family Physicians to account in managing the clinicians. This knowledge of the organisational values informed her decision-making. Another MDHS facility manager noted how difficult it was to change the practice of the doctors in his facility, who met every morning for a meeting which delayed the time that the first clients were seen. They resisted changing this practice even though it was raised repeatedly in staff meetings and with the substructure.

## **6.8.2 Other subsystems**

### **Supply chain management**

Facility managers experienced long delays and inefficiencies in working with the procurement department in the sub-district office. This impacted on their ability to equip service points to allow efficient service delivery. In the index MDHS facility, an extreme example was that the manager waited for three years before receiving the shelving required in reception to fully implement the design recommended by the LEAN method. She knew that the structural work on the building would take even longer. In MDHS, the facility managers' decision space was constrained by their experience of a dysfunctional subsystem: they struggled to implement system improvements which depended on the procurement department. They felt that the substructure office did not hold the staff working in procurement accountable for their poor performance

### **Human resource management**

The high rate of absenteeism meant that facility managers often operated in crisis mode to ensure that priority services were delivered. As discussed further in the case on managing leave, formal information in the human resource information system (HRIS) was not reliable and was not available in user-friendly reports, to support facility managers in managing this problem.

## Health information systems

The HIS supported a rational planning approach to workload and utilisation by collecting key indicators and presenting these in reports for review on a monthly basis. In City Health, the ability to generate an individual workload report on each clinical staff member meant that formal information was available to monitor work productivity, which facility managers found very useful. In MDHS this function was not available. The MDHS database PHCIS (Primary Health Care Information System<sup>44</sup>) housed the software used in larger facilities to make appointments. The programmers did not understand the changing needs in facilities: they tried to fix appointment times and quotas per appointment slot whereas the facility managers required flexibility in determining what times and intake numbers worked best in ensuring a smooth flow of clients through the facility throughout the day. The programmers were slow to respond to the facility managers' request for flexibility (taking longer than six months), instead offering one "last chance" to set the "right" time slots. This is an important ideological difference which acts against the information needs of facility managers.

Facility managers felt that the HIS introduced a management bias: what was not measured was not deemed important and was not appropriately managed. In the MDHS facilities, which bore most of the curative care load in the sub-district/substructure, deferral of clients was a daily management problem. Facility managers experienced this as conflicting with the client-centred approach vision, which the district and sub-district/substructure promoted. On a daily basis clients were denied access to services. Formal information was seen to portray only one side of the facility experience. Because formal data on the number of clients deferred was not kept (and it would not be accurate because of the significant amount of self-deferral), facility managers felt that their concern over the amount of clients deferred was not validated or seen as legitimate by their managers. One facility manager said she felt as though they were doing the "dirty work" of the senior managers who, being focused on aggregated statistics, who could ignore the real world problem:

*Even the department, they don't even want us to put those numbers down for them to see. They just want us to give the headcount and the headcount doesn't actually include the people that we are deferring. So in actual fact the senior managers don't really want us to tell them about the people we are deferring ... The picture that they want to put out there – because if we would look at the patients' rights it would say*

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<sup>44</sup> This is the provincial software used to manage primary healthcare client data

*that every person has the right to have access to a health facility - but it is not usually the case because we end up deferring some. Sometimes I think for (senior management) it is what is put on paper versus what is really happening out there in the facilities (that matters) (Peer facility managers, MDHS workshop 2)*

In this case, the formal HIS offered information beyond its usual narrow ambit of routine data, as it included periodic staff and client satisfaction surveys which the facility managers found very helpful.

## **6.9 Summary**

This chapter has defined the case and described how it is linked to other cases in this research. It has then described how this area of responsibility is managed, and has identified four focal areas within in: managing client intake, client flow, staff workload performance and allocation of work. Significantly, time emerged as a dimension in shaping the key decisions and the information uses. Careful attention has been given to the use of formal and informal information in this case. The role of experience and knowledge emerged as important factors which informed decision-making. Another important finding is that formal and informal information and knowledge were used *together* in decision-making. The influence of the health system context on decision-making and information use was found across a number of the WHO building blocks.

The next chapter deals with the second case: managing programme priorities.

# Chapter 7. Findings: Managing Programmes Priorities

## 7.1 Introduction

In South Africa, the organisation of primary level health services into programmatic interventions allows high burden diseases such as HIV and TB to be prioritised and given intensified technical programme support. The service delivery platform is still predominantly the primary healthcare facilities, with the operational management of programmes falling under the facility manager. This can present a challenge for facility managers tasked with ensuring delivery of a set of programmes and programme components on one service platform, particularly in the context of scarce resources. The case this chapter is concerned with is the management of these programme priorities.

### 7.1.1 Defining the case

This case focused on how facility managers made decisions in operationalising programmes, and how they prioritised programmes, particularly in relation to the allocation of staff time and management attention. It included all the decisions made by facility managers regarding the resources they manage, whether the programmes were delivered from within the facility or delivered in community settings.

### 7.1.2 How programme management is linked to the other cases

This case, which was concerned with how facility managers manage programmes and prioritise resources between and within programmes, is linked to both other cases: *Managing Leave of Absence* and *Managing Efficiency of Service Delivery*.

The key scarce resource in managing programmes was skilled staff. When staff were absent, there would be a need to re-organise client flow and re-allocate work to optimise efficiency, taking into consideration staff mix and available skills. The facility manager therefore had to know which priority programmes to protect in terms of keeping service delivery at a

maximum. She also had to ensure that her staff were trained to deliver the priority programmes. Managing training is covered in the case - Managing Leave, and allocation of work is covered in Managing Efficiency of Service Delivery.

### **7.1.3 How programmes were delivered in facilities**

The programme priorities at the time of this research included a strong focus on preventative services (such as immunisation, vitamin A supplementation, family planning and cervical screening) in addition to curative services such as child curative care. The organisation of service delivery differed between the two organisations, partly for historical reasons and partly because of the large size (over 100 staff) of some of the MDHS facilities. Historically City Health has been mainly responsible for preventative and promotive health services (delivered by nurses), and environmental health. While the services were increasingly being extended to include adult curative care, they remained organised in programmes with delivery of programmatic services allocated to specific staff at designated service points. At the time of this research there was a move to further integrate these services.

Historically, MDHS, which evolved from the Cape Health Services Organisation, was responsible for adult curative and rehabilitative services, with doctors as the primary providers of care and the addition of a highly specialised nurse cadre - clinical nurse practitioners. The facilities functioned as hospital out-patient departments (as signified by their previous name, *day hospitals*, which was still used colloquially during the time of the research). In some 24-hour units, there were also maternity services, including in-patient delivery. During the post-1994 restructuring, MDHS was required to take over two programmes which were previously run as vertical programmes by the national DoH: these were reproductive health and school health services and in the late 1990s, provincially-run tertiary mental health services devolved stable patient care, including some staff, to MDHS. The introduction of child and women's preventative and promotive health services was a more recent development (since approximately 2005) and, in larger 24 hour facilities such as the MDHS index facility, was noted as difficult to achieve. At the time of this research, the MDHS index facility remained a predominantly adult and curative-orientated service, although various models for introducing and integrating promotive and preventative care had been developed and implemented with varied success: an extended hour service, staffed by

CNPs offering preventative child and reproductive health, outsourced services (e.g. male medical circumcision), and campaigns. Overall, there had been resistance from the doctors in taking on preventative programmatic services such as HIV counselling and testing (HCT), family planning and cervical screening, which subsequently shifted to clinical nurse practitioners, and instead of being offered as part of a comprehensive package, were offered only at dedicated service points with dedicated staff. In larger 24 hour MDHS facilities, services were organised in departments, in keeping with the hospital architecture where they originated. The largest departments were trauma, maternity services, dental, ART and general outpatients. Reception, housekeeping, X-rays and social work were also thought of as departments, and had departmental heads.

## **7.2 Managing programme delivery in facilities**

Management of programme delivery within a facility required attention to the organisation of services (which services were offered at which service points, within the facility), including: management of inputs such as staffing, drugs, consumables and equipment; information management and management of training. In the study site, the key scarce resources were appropriately skilled staff in sufficient numbers, and management time (the latter especially in relation to managing staff, following up on procurement and monitoring service outputs and quality). A particularly time-consuming aspect, emphasised more in City Health facilities, was the management of routine programme information through a series of validation cross-checking processes, and through returning to client folders to review if data was captured correctly. Where facility managers did not have time to attend to all aspects of programme management, they prioritised data validation over other activities such as clinical governance. Validation is discussed later in this chapter.

It was at the level of the facility that the facility manager had to manage programme priorities imposed by the sub-district/substructure office, some of which competed for staff or management attention. This was a particular concern for the MDHS facilities, which were supported by a wider programme technical support team, separate from operational

management:

*It's difficult but we try and balance them. As you can see the different people [at the substructure level] in each programme wants to have your full attention. Each programme wants to push their particular programme so at this level you need to receive from all of these people. The person who is doing immunisation would want to push immunisation because that's important to him or her, not knowing what is happening at this level [referring to the facility].*

(Index facility manager D, interview 1)

As an example, the experience of the City Health facility managers in implementing a sub-district reproductive health (RH) project demonstrates some of the challenges in managing programme inputs. A particular challenge was to ensure that there was sufficient staff who were trained (and subsequently mentored to develop the necessary skills). In 2012, twelve staff members were trained in reproductive health which included the insertion of IUCDs. Despite this, the number of IUCDs inserted per facility and in the sub-district as a whole, failed to improve much and remained far below target. In part, this was because facility managers ordered equipment required to implement IUCD insertion which took over six months to arrive. Also, a number of the trained staff left the sub-district after training, which meant that some facilities again had no-one trained in IUCD insertion. The high staff turnover was noted as a major constraint to sustaining a trained, skilled workforce, and this impacted on all programmes.

Facility managers in both organisations used the following strategies to improve programme coverage:

- Work allocation within facilities to ensure that there were maximal service points open to offer the priority service
- Fast track lines for clients to reduce waiting times at reception and consulting rooms
- Outreach to increase access to the service through community-based provision by facility staff
- Campaigns run for defined periods both within and outside the facility
- Health education activities in the facility and in the community using not-for-profit organisation (NPO) workers and different cadres of clinic staff, to create awareness and promote a service

- Use of *programme champions* appointed to motivate their peers and take on specific administrative and leadership responsibilities in the programme.

In using these strategies, facility managers were managing a careful *balancing act* of staff time in providing services - within versus outside the facilities, as well as modes of delivery which ranged from routine facility-based, to campaigns and outreach.

### **7.3 Focal areas of decision-making in managing programmes**

Attention to facility managers' discourse on managing programmes priorities suggested that a common divide was around managing the *quantity* versus the *quality* of services. They perceived the sub-district/substructure management in both organisations to be preoccupied with increasing programme coverage rather than with addressing the quality of the service. While they were critical of how targets were set, they felt driven to achieve these targets, and made huge investments in validation of the routine dataset, especially in the case of City Health managers. The key management foci in managing programmes priorities are thus categorised as:

- Managing the completeness and quality of routine data; this was more of an emphasis in City Health than in MDHS
- Managing the adequacy of programme coverage; in MDHS this included deciding how to staff programmes
- Managing the adequacy of quality of care in programmes.

#### **7.3.1 Validating routine data**

Observations in this research revealed that the validation of RMR and register data absorbed a large amount of management time, particularly in the City Health facilities. The sub-district management in both organisations required facility managers to validate the routine data before monthly submission to the sub-district office. This was supported by a standard operating procedure which set standards for data checks, allocated responsibilities and set timelines. In City Health, this process was managed more actively than in MDHS. The City Health sub-district manager implemented various strategies to teach, mentor and monitor how

the facility managers validated the routine data; for example, in the sub-district management meeting a substantial amount of time in the PDR review of data was devoted to data validation, and validation exercises were practised; a full day training workshop on the importance of health information and how to improve data quality was devised and all staff (from cleaners to clerks through to clinicians) attended; in addition, a monthly validation meeting was introduced; this was first done in early 2013 in the form of a one-on-one meeting with the programme manager and health information officer, but changed later in 2013 to a collective meeting of all the facility managers and the sub-district managers. In MDHS, data validation was discussed as part of a quarterly PDR review in the management meeting, with less time devoted to it in the meeting; only if data obviously did not make sense, was validation discussed at this level.

Facility managers delegated responsibility for validating various registers and information to their staff; first- and second-level managers delegated this to their clinical staff and HODs respectively; however, they remained responsible for signing off on the data. In City Health, this meant that they remained actively involved in mentoring their staff on validation and in sorting out data errors. The short lead time between end of the month and data submission meant that if any clinical staff were absent at the beginning of the month, the first-level facility managers might have to do the validation themselves. All City Health facility managers reported that data validation was a major activity in their work schedule.

City Health facility managers had developed various practices to validate data which depended predominantly on comparing two data sources as shown in Table 7.1. For example, STI data on the new cases captured by clerks in the electronic RHIS, was compared with STI data from the HCT register on how many of the HCT clients tested had presented for STI treatment; this was collected and collated by counsellors or nurses. Discrepancies required that a list of clients be generated as a report from the electronic system and compared with the clients recorded in the HCT register. The folders of clients noted on only one, but not both sources, were then drawn, and clinical notes reviewed to see what care they had received i.e., did all the STI clients have HCT, unless they were already known to be HIV positive, as per protocol? Data was then corrected in either the electronic system or register. During this process, the clerks would draw the folders if they had time, but in some instances this was done by the facility managers. The process was extremely time-consuming. The facility

manager also spoke to the clinical and clerical staff as well as observing routine data processes, in finding out why errors were occurring. Staff accounts and observations were thus valuable sources of local informal information in validating the formal information. At the time of this research, different causes of data collection errors were identified by facility managers, for example:

- Deliberate changes to data by staff as part of *gaming*<sup>45</sup>, e.g. in one facility, the facility manager found that staff were changing the HCT register to match the number of clients identified with STI in Prehmis to cover up mistakes; they mistakenly made the data correspond exactly, not realising that not all STI clients would have HCT as some would already be HIV positive.
- Errors by clinical staff in recording data on the RMR sheet or programme register
- Errors by clerks in data capturing
- Clerks filing folders without capturing data, a particular problem when there was a backlog in data capturing or filing
- Differences in data definition – this is not a true error but a cause of a discrepancy when comparing data between systems (e.g. diarrhoeal disease in Prehmis might include all cases, including the children over 5 years, while the diarrhoeal disease project emphasises the age category under 5).

Facility managers were then involved in decision-making on how to improve the data systems and how to manage errors through the managing of staff. For example, one facility manager found that a key problem in her facility lay with a particular clerk who took excessive unplanned leave. This created a backlog of data capture in the reception, and she observed that when the clerk became stressed, he re-filed folders without capturing the data for the visit in the electronic database. Part of her strategy to improve data quality was to manage his unplanned leave (which she did very successfully over a period of 8 months – see the description in Chapter 8 - Findings: Managing Leave of Absence). She also monitored his work both through informal observation and formal auditing of his work, and used formal counselling to manage him in this regard. Finally, she ensured that any backlogs in capturing and filing folders were immediately dealt with by drawing ENAs into the reception to assist.

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<sup>45</sup> *Play the game* by giving the system what it wants (higher statistics for coverage) without improving actual service delivery

**Table 7.1. Datasets routinely compared in data validation**

	Source 1	Source 2
<b>Basic antenatal care (BANC)</b>	BANC report in Prehmis	Number of BANC clients booked for a first visit and done, as indicated in appointment book for first visit; Number of HCT done in BANC clients in HCT register
<b>STI</b>	Number of new STI cases from Prehmis report	Number of HCT done in STI clients in HCT register
<b>Reproductive health</b>	Number of IUCDs inserted	Number of IUCDs booked and done, as indicated in appointment book
	Number of under 18 receiving family planning, from Prehmis	Number of under 18 receiving family planning, in staff work record at each service point
<b>PMTCT</b>	Number of children in PMTCT register	Number of HIV tests done on children under 5 in HCT register
<b>Child health</b>	Number of cases of diarrhoeal disease in P Prehmis	Number of cases of diarrhoeal disease from project report
	Number of children completely immunised <1 year, from Prehmis	Number of 9 month immunisation given, as recorded in staff work record at each service point

Some of the cross-checks made between datasets were practiced at most facilities while others were particular to certain facilities. In City Health facilities, there was a pervasive parallel data collection and collation process, which was used to validate the RMR. In addition to filling in the official data collection sheet in the folder (which was then captured by the clerks onto the RHIS), each staff member was responsible for a set of data sheets kept at their service point, on which they collected independent data of client details (via a client sticker) and of the services given. These were then collected every week, collated manually and used to validate the RHIS.

### 7.3.2 Managing programme coverage

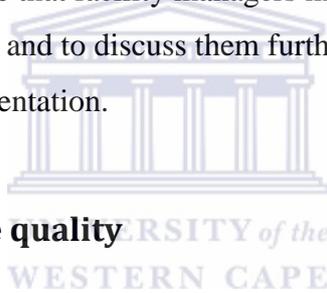
There was a strong tradition of using formal information to manage programme coverage in both organisations. Programme output indicators were the main indicators measured, monitored and managed as targets, both in the formal PDR processes at district and sub-district/substructure level; they were also the primary focus in the performance management of all levels of operational and programme managers, as well as clinical staff in MDHS. These served, therefore to support facility managers to monitor their facility's progress

towards programmatic service delivery targets on a regular basis, in formal management and supervisory processes. In City Health, a review of progress towards programme coverage targets was allocated two of the available seven hours in the monthly management meeting. Completeness and validity of the data was checked, and then each facility manager was called on to account for her facility's performance in relation to the facility target, a 12 month facility trend line and other facilities in the sub-district. Individual and collective problem solving and strategising was encouraged. In MDHS, the same process was followed, though given less time and undertaken only on a quarterly basis; in this regard, a number of the monthly MDHS management meetings were cancelled during the time of observation. In both organisations, monitoring of the targets and planning to improve programme coverage was also part of performance management; in City Health, this happened in the monthly one-on-one meetings of the sub-district managers with the facility manager, and in MDHS, it was undertaken quarterly in the facility managers meeting. In both organisations, there were also programmatic project management meetings around particular initiatives (e.g. in City Health around a sub-district-wide reproductive health project) or vaccination campaigns, which met regularly and monitored and further managed programme coverage.

Within their facilities, facility managers created awareness around programme coverage and targets, by displaying key indicators on notice boards inside or outside their offices. One facility manager also used the notice board in her staff room to show the progress that individual clinical staff members were making, in reaching facility-set targets in a new initiative which was part of the reproductive health programme; it aimed to identify potential family planning *acceptors* among women attending for other services. In the City Health facilities, managers reported back on the key discussions of programme coverage, and decisions taken at the sub-district management meetings. They highlighted in staff meetings the indicators that were falling behind targets, and invited staff to participate in problem solving and developing new strategies to extend programme coverage. For example, one facility manager began a facility project to improve HIV testing rates in sick children under five (according to the Integrated Management of Childhood Illnesses [IMCI] protocol), when she found on review of the HCT register that very few children in this age group were tested. She found that staff were reluctant to suggest HIV testing to caregivers, fearing the social implications and the distress of diagnosing a child. The purpose of the policy was explained, and she then monitored the *number of HCT under 5* performed, and gave monthly feedback

to her staff. In the index MDHS facility, the manager presented some routine data during HOD meetings, though this was not a strong focus of her meetings during the time of observation. On one occasion, data was presented showing poor performance on cervical screening, but it drew little discussion. Some HODs, such as the ART section HOD, spoke knowledgeably and accurately of their departments' targets and progress towards meeting these targets, and regularly used this information in their departmental staff meetings.

Across both organisations some facility managers preferred to manage more actively by holding individual meetings with their programme *champions* (staff given programme portfolios and tasked with motivating their peers and supporting some aspects of logistics or health information management) to problem solve and strategise together. First-level managers worked with their champions, selected groups or the whole staff, in implementing new strategies and in solving operational problems that arose during implementation. In most facilities, there was some evidence that facility managers made opportunities to review the new strategies once implemented, and to discuss them further with their staff, particularly if there were problems with implementation.



### **7.3.3 Managing programme quality**

Various structured processes and tools were in place to manage programme quality. A supervisory quality assurance tool was used to monitor whether processes were in place and whether equipment and supplies were available to support quality service delivery. This was administered by the supervisor as part of a monthly supervisory visit to the facility. Facility managers in both organisations felt that this tool was too onerous and dominated the supervisory visit, leaving little time for them to raise their own issues or to direct the support they required.

Within their facilities, facility managers were responsible for ensuring that a set of programmatic clinical governance audits were conducted regularly, as described in Chapter 5 - Findings: Understanding the Context. In City Health this was done by the facility manager herself, whereas in MDHS this was delegated to family physicians. City Health managers found the monthly small sample informal audits (one or two per folders sampled per clinician) to be a particularly valuable way of ensuring that protocols were being followed. In

both organisations, first-level managers used a range of management strategies to improve the quality of programmatic services, while second-level managers delegated this to their HODs. Some preferred to address service quality as a collective issue in monthly staff meetings or in ad hoc meetings of clinical staff. Others held individual meetings with clinical staff, and made a record of remedial plans in their counselling books. The managers also differed in the extent to which they involved the programme champion. Interventions included sending staff on clinical training, providing mentorship, organising peer-mentorship and creating opportunities to revise protocols collectively. Monitoring these interventions was done through ongoing, and often more targeted, clinical governance audits.

## **7.4 Use of formal information in managing programmes**

As described in section 7.3.1 of this chapter, there was a strong and deliberate use of formal information from the HIS in managing programmes, and this was entrenched in the sub-district/substructure PDR and performance management systems. Furthermore a lot of management attention (in both organisations but particularly in City Health) was given to improving it. Formal information from the HIS had a key role in monitoring programme coverage, while formal information generated through the use of audit tools was used to monitor programme quality. Baseline performance in both programme coverage and quality was most often assessed through the use of quantitative data; key problems were identified and the success of interventions to address these was then monitored, often through the use of the same quantitative data.

Facility managers also innovated in creating additional, local, purpose-specific formal routine information, when the official, district HIS did not meet their information requirements. For example, when an extended-hours service was initiated by MDHS to increase access to preventative services for women and children, a register was devised to monitor whether the service was reaching its target population. Age and gender of clients was recorded together with services received. Data was summarised, presented and interpreted at a clinical management meeting when the extended-hours service was reviewed. On the basis of the data, the meeting decided to make a recommendation to the substructure that the extended-hours services be stopped. There were examples of similar innovations in the City Health

facilities, particularly around developing processes to capture the reproductive health statistics on outreach initiatives into the community.

Not all formal information was quantitative. City Health facility managers developed an information sheet to track which community locations they had been to on their family planning outreach visits, as a way of planning where and when to return for repeat administration of injectable contraception. In 2012, the index MDHS facility manager introduced the use of a *communication book*, issued to each HOD, in which they were required to document their weekly reports to her. It was handed in after the HOD meeting and signed by the facility manager. The process of verbal reporting in the HOD meeting, documentation of reports in the communication books and the minute taking all formalised some aspects of the information presented in these HOD meetings.

## 7.5 Use of informal information in managing programmes

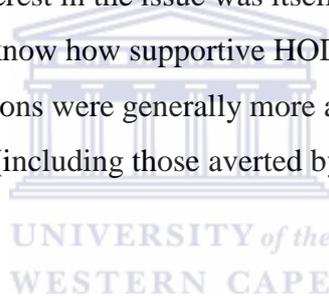
While the use of formal information seems at first glance to be more dominant in this case, closer exploration of information used in decision-making reveals the use of informal information as well. The informal information was generated in different processes; the main ones which emerged are described in this section.

### Interactions with HODs

In managing the operational issues related to programmatic service delivery, the second-level managers relied heavily on information they received from their HODs. While some of this information was formalised in the HOD meetings (see above), a great deal was informal, with HODs *stopping in* at the managers' offices. The index MDHS facility manager spoke about the importance of building accountability and trust in the relationship that she had with her HODs to ensure that they were open to sharing information with her. She felt that an open-door policy and the willingness to listen contributed to the building of trust. Although her office was in a separate wing of the facility from the HOD's, it was next to the tea room, and HODs were observed to make impromptu visits to discuss matters as they arose, either because they wanted advice or because they felt that the facility manager should know about the issue. These exchanges were rich in current information that was welcomed and highly

valued by the facility manager. During one morning of observation at the index MDHS facility, three HODs made impromptu visits (*dropped by*) for brief, but information-laden, conversations. One conversation related to the submission of formal data on a specialist dermatology clinic (approximately one minute), another was on how a complaint was being handled (approximately two minutes), and the third dealt with a relationship issue in the planning of a community-based activity with substructure staff (approximately eight minutes).

The information exchanged in the HOD meetings was both formal and informal. In one meeting in the index MDHS facility, data on cervical smear coverage was presented, showing that the facility was way below targets. The facility manager could elicit little discussion on this issue, prompting speculation that this might perhaps reflect a general resistance to strengthening this preventative service in a facility which had historically offered curative services. The apparent lack of interest in the issue was itself valuable information for the facility manager, who needed to know how supportive HODs were of the new preventative programmatic focus. The discussions were generally more animated around operational challenges and client complaints (including those averted by staff intervention) reflecting the interests of the HODs.



Facility managers also interacted with their HODs while doing *walk-arounds* of their facilities; in their interactions with the HODs, they accessed lots of informal information that was current and novel, and which reflected the HODs' perspectives, how active they were in managing the responsibilities they had been delegated and the extent to which they were coping with these responsibilities. This information was important in managing programme coverage and quality, in identifying problems, understanding why they existed, and in informing potential solutions.

### **Observations**

Facility managers varied in the frequency of doing rounds in their facilities, but in both organisations, rounds were valued as an important management activity generating important information that would otherwise not be readily available. Most did a daily round at 08h00 to observe whether service points were open on time and working efficiently; they also used these rounds as an opportunity to observe processes, whether rooms were adequately

equipped and how staff were working. The value of this to facility managers is expressed in this quotation by a second-level manager:

*I cannot rely on HODs to come to me; I need to do a walkabout. This I must do every day. I do a walkabout from the trauma, right through to the MOU. There are things that you will pick up when you are on a walkabout that they will not tell you about. You will even find out about the equipment that is not working. There are lots of things that you will not find out about if you just wait.* (Index facility manager D, interview 1)

Observations of clinical practice and procedures were gathered opportunistically on an ad hoc basis as the facility manager moved between service points in the facility. Other deliberate observations were done when the facility manager wanted to understand a process better or wanted to see a staff member at work.

### **Role of experience**

In this case, there were instances where decisions in programme management were informed by information gathered (and translated into knowledge) through experience. This is illustrated in an embedded case study of an immunisation campaign which ran in 2012. A facility champion was appointed by the index MDHS facility manager to represent the facility in substructure planning, implementation and monitoring of the campaign, to motivate peers in the facility to be involved in campaign activities, and to take on a set of administrative duties related to the logistics of running the campaign.

The campaign, described in Box 7.1, was coordinated by a substructure programme manager (the assistant director for facility-based services) who called regular meetings for campaign planning and monitoring, which involved the champion and facility staff from key departments - outpatients, school health, and ART section. In the absence of tried and tested strategies for reaching children for vaccination, experimentation and innovation was encouraged. Statistics were kept on the number of children immunised at the site each day and were used to support learning as well as monitor progress towards meeting targets.

## **Box 7.1. Learning from experience: developing novel strategies in an immunisation campaign**

### ***Interview notes of an interview on 18 June with immunisation champion at Facility D***

*The campaign started in February and ran through to May. It has now been extended for the month of June. Originally 88 crèches were allocated to Mitchells Plain CHC and by the end of April, all crèches had been covered. Two teams went out on different days of the week: the School [of] health nurses immunised every Friday, while the general CHC team went out on Tuesdays and Wednesdays. Children attending the ART clinic on a Friday morning were also immunised at Mitchells Plain CHC.*

*Once all the children in the target age group in the crèches had been covered, the campaign planning team decided to seek out other community sites to access children for vaccination. In April they decided to set up at the (local shopping mall). They were given a space which was not in the public eye, so they tried to 'market their product' by having community volunteers wearing orange bibs wander through the mall to advertise the campaign. The management of the mall objected to this so they then put up posters on boards in the foyer but found that this also didn't really work. On a good day they would only get about 25 children to immunise. They tried various strategies such as going into shops and identifying children potentially in the right age group and approaching the parents or guardians to let them know that they were offering immunising and they would then direct them to the campaign room.*

*They then had a joint meeting with City Health colleagues who advised them to go to the areas where the campaign coverage statistics were low: Crossroads, Phumlani clinic and Weltevreden. [The champion] decided to stay locally and so they are now covering Eastridge, Westridge, Beacon Valley and Rocklands. Since this decision they have been going out in a vehicle with a loudhailer and stopping to immunise children. They have three voluntary workers supporting them by providing informal security. They have also been to the town centre which is busy on the day that social grants get paid out (around the 5<sup>th</sup> and 6<sup>th</sup> of the month). On one such day they were able to immunise 72 children in a 2 hours session. All they had with them was a cooler box containing the immunisation equipment. They borrowed a chair from a shop owner so that the mother could sit with the child on her lap while the child was being immunised. The school nurses are going into the schools and giving notes to the children to take home informing parents of the date they will be back at the school to immunise the younger children in the household.*

*This month the immunisation team has been going out every day and 2 locum professional nurses have been employed for the month to assist. Today they went to Lentegour. They had heard about a community-based soup kitchen and decided to target it, but when they arrived there was no one there, so the campaign team drove around in the area with the loudhailer and immunised a number of children in the street before returning to the soup kitchen where they found some children.*

*When asked what she has learnt and what she would recommend to others, (the champion) says that she feels they wasted a lot of time by first going to the crèches. The children of this age group are in the community. Mothers are at home. She was surprised to find teenage mothers still in their pyjamas at 10 am in the morning. The (social grant pay-out) queues and the community-based soup kitchens are also good to target.*

The extract demonstrates that the original plan for accessing children in the target age group evolved once the children in the crèches were covered, but with the immunisation target not yet reached. The campaign team then experimented with different sites (e.g. a shopping mall,

a roving vehicle in the community, the Town Centre) and strategies, to gain access to the target age group children. Some of these strategies were not successful (e.g. setting up a fixed site in the shopping mall), while others worked well (school health teams advertising through school children). The successful strategies became innovations that were adopted across the substructure. The team also gained essential information about the logistical support required (the need for a loudhailer and security in the community; being able to make do with only a chair and an immunisation in an informal immunisation station in the Town Centre).

Learning - and in this instance, the generation of new practical knowledge - took place through trial and error. Learning also took place through exposure to the community in different settings. The champion learnt more about the community (e.g. about social practices such as teenage mothers not yet being dressed by mid-morning, young children being at home rather than in crèches).

By virtue of her position in the team, the champion was a central figure in sharing the learning within the organisation: she participated in the campaign planning and monitoring meetings with the substructure programme manager, reported to the facility manager and communicated new decisions to the facility staff implementing the campaign. She gathered learning from, and communicated learning to, these three stakeholder groups.

There is evidence that the experience, when learnt of by the facility manager from her oversight of the community-based campaign and her interactions with the facility champion, was transferred to problem solving in the facility. It became current and relevant information about the community's need for programmatic services. For example, when the introduction of a facility-based immunisation through an extended-hours service failed to attract many children, the facility manager drew on the campaign experience to interpret the underlying reasons. Instead of assuming that there was no need for this service (because, for example, all the children had already been immunised by the surrounding City Health clinics), she recognised the fact that the campaign had found many unimmunised children at home:

*But immunisation is coming on very slowly, because we are surrounded by many clinics in this area...But with the campaigns that we have, like the PCV campaign that is running, it is surprising how many children they are finding to immunise. So I'm not sure; we need to find some other way of attracting the children. (Index facility manager D, interview 2)*

## **7.6 How formal and informal information was used together in managing programmes**

In this case, formal and informal information did not work in isolation from each other in decision-making; instead, these two kinds of information were often combined in different ways within the same process. Three different interactions stood out: the first occurred where formal information was used as a lens or reference to interpret informal information; in the second, this relation was reversed, with informal information being used by facility managers to validate, interpret and act on formal information; in the third, formal and informal information worked together interchangeably in structured or loose management cycles.

### **7.6.1 Formal information as a lens through which experience was interpreted**

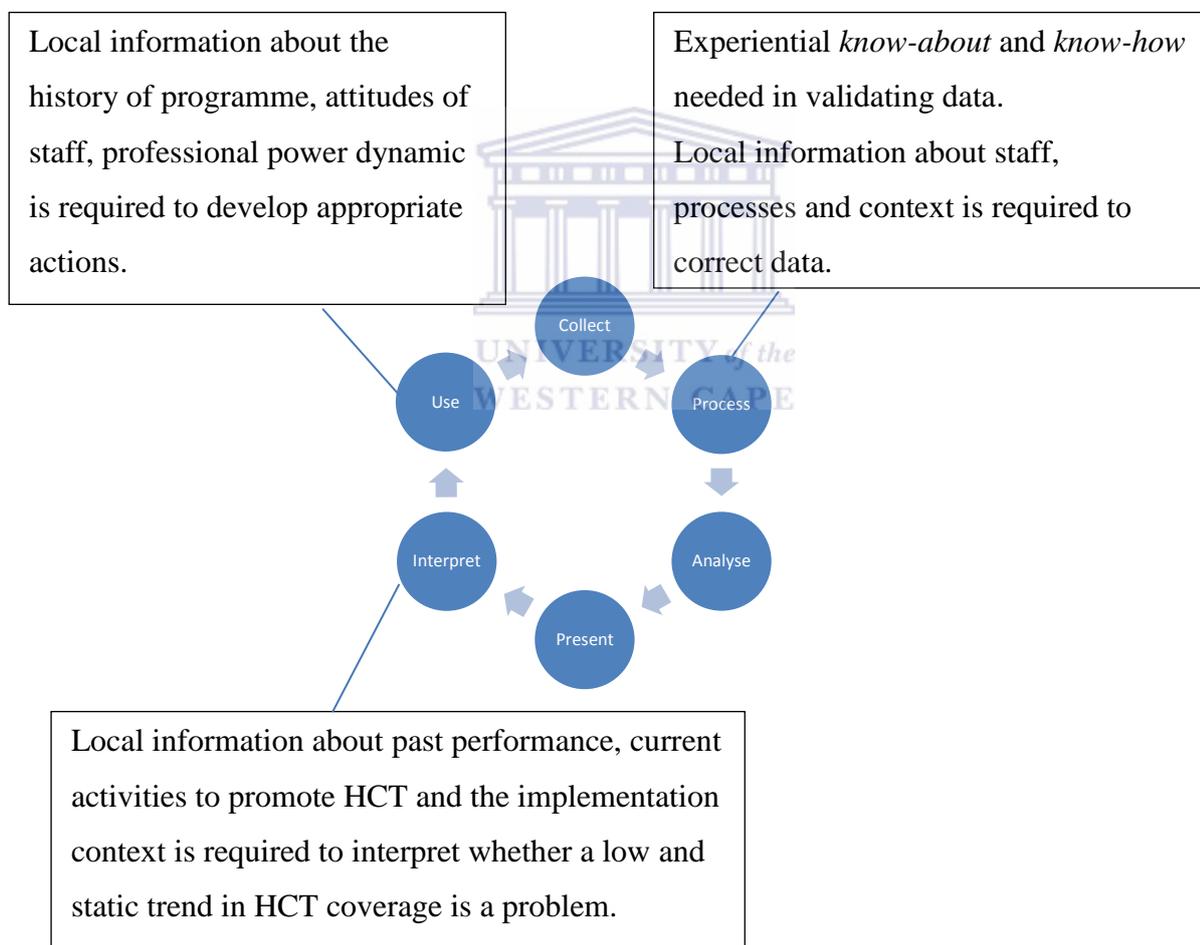
The PCV campaign described in the section above is a good illustration of one way in which formal information and informal information can work together. In this campaign, the formal information acted as a lens through which the experience (informal information) of running a campaign in the community was interpreted. The statistics kept in the facility on the number of children immunised, were used in monitoring progress towards the immunisation targets. When staff returned from the community, they brought the formal data collected for the day, which was immediately collated and summarised. These statistics became an immediate indicator of whether the sites visited and strategies used were appropriate and successful in reaching the target population. Campaign staff interpreted their experience in the community through the lens of the formal data. They added to this their observations and recollections of interactions. This guided their learning on what sites and strategies were *good* for reaching their targets in this particular type of campaign.

### **7.6.2 Information use cycle**

The approach to information use in the district at the time of this research was strongly influenced by the notion of the *data (or information) use cycle*, which formed part of the basic information literacy training for managers and health information officers at the time.

The cycle is focused on formal information and encourages its use in decision-making. The steps, as shown in Figure 7.1, involve deciding what formal information to collect, processing the data collected (which includes validating the data), analysing the data by creating indicators, presenting the data in a form that users can then interpret, and acting on the information. Despite the focus on formal information in this model, this case shows the essential role of informal information at three key stages in the cycle.

In this case, validating data involved a set of data checks. Once a problem was identified, it needed to be investigated and corrected. This required information from a range of data sources, some of which were informal: observing staff and their practices, talking to staff and reviewing client records. This information often proved to be about particular (clinical and clerical) staff and their practices, as well as about the local context.

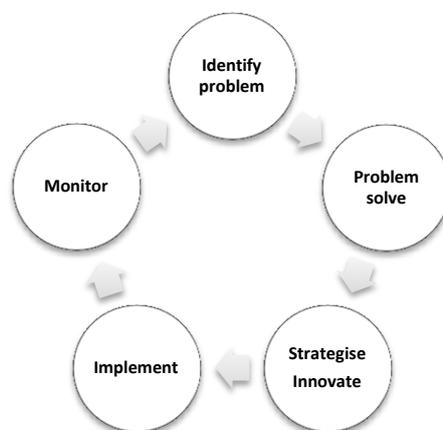


**Figure 7.1. Use of informal information to validate, interpret and act on formal information**

Informal information was also needed to interpret some of the formal information, for example, regarding the question: *is the family planning coverage in the facility low?* Knowing the community context and the seasonal variations, having experience in other similar facilities, knowing the extent to which planned strategies to improve family planning coverage had already been implemented, knowing whether key staff had been absent for the period, were all important aspects of information, which helped the facility manager interpret the variety of received information. Finally, informal information was also vital in developing appropriate action. The facility manager's local knowledge of her particular staff, facility processes and community was required to inform choice about feasible and appropriate interventions.

### 7.6.3 Planning or management cycle

Planning or management cycles can be used to describe the steps that all the index facility managers used when managing all three key foci of programme management. While these management cycles were often driven by formal information, informal information played a vital role in informing decision-making. A generic management cycle is shown in Figure 7.2 and shows the sorts of steps they followed, although this was not always as neatly sequenced as in the figure: assessing whether there is a problem (problem identification); problem solving (*why does the problem exist? what were the underlying causes?*); strategising and innovating (*what can be done differently to address the problem?*); monitoring the implementation and the impact of the new strategies.



**Figure 7.2. Use of information in the management or planning cycle**

At times, facility managers followed this sort of cycle very consciously, especially in structured meetings with staff, or when developing an action plan guided by sub-district/substructure templates (e.g. after the HAST audit). At other times, facility managers followed the cycle loosely, and without formal documentation of the process. For example, in one small facility, while on a morning round of the facility, the manager entered a consulting room where she found that a staff member was not following a treatment protocol. This was a casual observation which led her to identify a problem; note that in this instance it was informal information that led to the problem identification rather than a review of formal information. She then implemented a strategy based on her assessment of the underlying cause (that the staff member was not sufficiently familiar with the protocol). This consisted of on-the-spot training, with the intention to monitor the staff member by observing her practice again later in the week, and followed by a formal audit when she did her clinical governance audits that month; in this, she established a monitoring plan.

In a large facility such as the MDHS index facility, the HOD meeting often served as forum to hear problems that HODs had identified, which they then reported. The meetings created a space for joint problem solving and strategising. Monitoring of progress in implementation and in the effectiveness of new strategies was done at subsequent HOD meetings through ongoing report backs by the HODs involved.

## **7.7 Acquisition and use of knowledge in managing programmes**

Thus far, the description of information use in managing programmes has only employed the broad categories of formal and informal information. Information that is usable or applied can also be considered *knowledge*. A further analysis drawing on Zack's typology of knowledge revealed that the information generated and used in managing programmes translated into different types of knowledge.

The validation of formal data involved a set of data checks which required *know-about* (what to cross-check) and procedural *know-how* (how, practically, to do the cross-checks, when to do which cross-checks, and how to investigate the data errors that were discovered).

Correcting the validation errors and improving the processes required facility managers to use information gained through observation and interactions about particular clinical and clerical staff and their practices, the processes in place and local context. This was local *know-about*. It enabled the facility managers to understand how and why errors got introduced into data collection and capture processes. This causal knowledge, *know-why*, was essential in addressing the underlying causes, and meant that facility managers were able to implement interventions to strengthen the process, rather than just correcting the current data errors. With experience, facility managers also gained knowledge about how the process, and the particular staff member in process, behaved when there were changes to the team (for example, on a day when one clerk was absent, or where an ENA was allocated for clerical support); in addition, experience brought understanding of variations in the standard procedures (e.g. if there were too many folders to capture in an afternoon and this task had to be fitted in the following day), or challenging circumstances (a busy day after a long-weekend when the client load was high). This was conditional knowledge, *know when*, knowing what to expect under what configurations of staff, processes and circumstances.

In this case study, monitoring programme coverage and quality relied strongly on formal information. The confident use of this knowledge translated into *know-about*, as was exemplified in the index MDHS facility's ART HOD command of the ART programme statistics. Facility managers had to develop procedural *know-how* in reading tables and graphs, and doing comparisons to aid the analysis of the data. However, further steps in management cycles such as *problem-analysis*, required more detailed *know-why* generated from applied understandings of local factual information about staff and their practices, facility processes, the local community being served, and the context in which the facility operated. Such detailed *know-why* was similarly required to inform the development of feasible and appropriate new strategies.

The main processes that generated informal information in this case (observations; interactions with HODs and staff; learning from experience) all had the potential to allow facility managers to develop applied understandings of the information (and as such to acquire knowledge). Observations supported the development of procedural knowledge (e.g. knowing how staff worked and how process functioned). In addition to the collection of factual information, interactions with HODs and staff provided an opportunity for collective

thinking, discussing of experiences and insights, remembering back to similar instances in the past, identifying similarities and differences between situations that require similar and different management decisions. Informal information gained from these interactions therefore had the potential to be rich in *know-why* and *know-when*. Information generated through experience has, by definition, gone through a process of application and can thus be considered knowledge.

## 7.8 Learning from reflective practice

The role of reflective practice, used individually or collectively, deserves special attention in this case as it was observed to generate detailed *know-why* and *know-when*. It is illustrated in the vignette in Box 7.2, describing how reflective practice was used in the sub-district reproductive health project.

### Box 7.2. The sub-district reproductive health project – creating a space for collective reflective practice

*Researcher notes made from observations of the reproductive health project meetings held on 16 October 2012 and 9 November 2012 and supplemented with key informant interview on 23 October 2012*

*The need to strengthen family planning coverage was identified as a sub-district priority in mid 2012 at the sub-district management meeting. Data from the RHIS showed that that the coverage was low across all facilities. In September 2012 a special project team was convened to meet monthly to develop and implement a programme of action. The team consisted of all the facility managers and their elected facility champion for the reproductive health programme. It was chaired by the sub-district Programme Coordinator and attended by the PHC Programme Manager. The meeting was designed to be a place which enabled facility managers to engage in joint problem solving and strategising, sharing of innovations and reflection on experience. It also enabled the sub-district Programme Coordinator to gather information on whether and how the project interventions were being implemented.*

*In the first meeting facility managers identified the deterrents to clients accessing family planning [FP]: long waiting times and poor staff attitudes. This information came from clients who complained directly to the facility managers or other facility staff who then reported this to the facility manager. It was confirmed by information from the formal complaints systems at facility and sub-district level, and a district-wide community survey. Both these complaints have become part of the collective discourse in relation to the quality of care and were regularly discussed at facility, sub-district, district and provincial level. In the RH Project meeting, the facility managers now applied this collective information to the reproductive health programme, and identified long waiting times and poor staff attitudes as significant obstacles to clients accessing family planning.*

*One facility reported that it had had great success in reducing waiting times in their ART clinic by giving clients appointment times. Learning from this experience the RH Project team decided to introduce appointment times to the FP service across all the facilities. It was decided that clients should be asked what time of the day was*

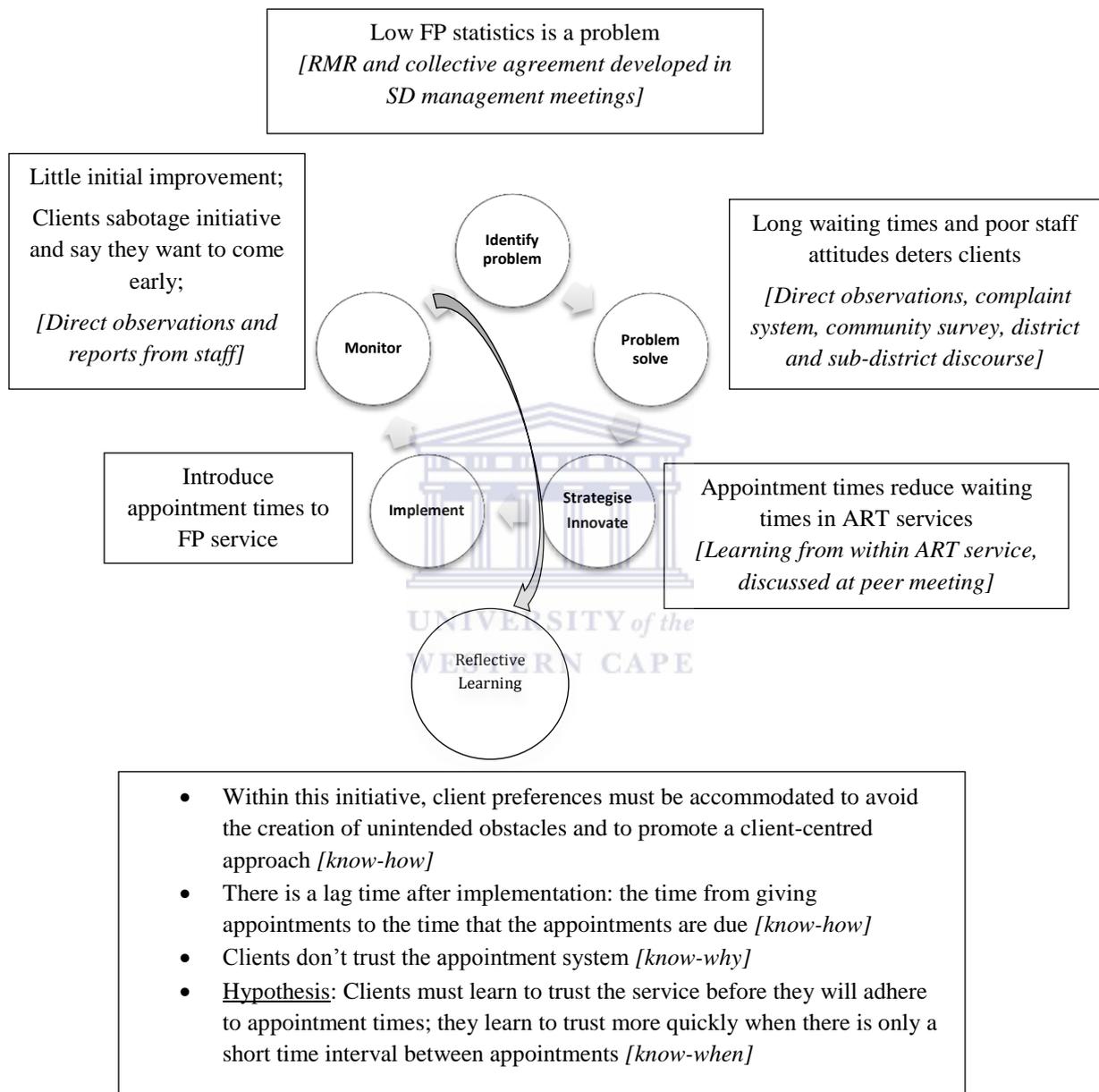
*most convenient for them to attend the facility and should then be given a corresponding appointment time.*

*The next meeting the facility managers reported varying results with this initiative. Most found little difference in client flow through the day and reported that most clients still came early in the morning causing congestion of services and longer waiting times. One facility manager had misunderstood the instruction at the last meeting and reported that in her facility it was not necessary to give an appointment time as clients could come at any time (and chose to come in the morning). This allowed the Programme Coordinator to clarify that the intention of giving convenient appointments was to spread client attendance throughout the day. Only one facility reported that the introduction of appointments times was working well but in the ensuing discussion it became apparent that they had implemented the strategy a few months ahead of the other facilities. In seeking to understand why the intervention was working in this clinic and not in others a lesson emerged: the strategy required a few months before it would yield the desired outcomes, because clients only return after 2 or 3 months for their next appointment.*

*Some facility managers reported that clients chose to come early in the morning, even if they had been given an appointment for later because they preferred to come early. Others in the meeting contested this idea. One facility manager reported that, guided by the PHC Programme Manager, she had instructed her staff not to see the clients if they came early until their appointment time, as this demonstrated to clients that the appointment time was important. The meeting discussed the importance of giving a convenient appointment time so that the appointment does not become an obstacle to access when the intervention is intended to remove obstacles. Facility managers reminded one another of the organisation's client-centred approach which seeks to accommodate client preferences. A suggestion was made, which resonated with many present and became an hypothesis, that clients ignore appointments because they don't believe that facility staff keep to the appointment times and because they are scared they will be turned away if they arrive later in the day (on busy days a system of deferment is implemented and clients who present later and do not have emergencies are deferred). A further hypothesis was put forward: the ART clients quickly learnt to trust and adhere to appointment times because they were used to the practice of appointments (they are traditionally given an appointment day) and because the ART appointments happened more frequently (initially every two weeks when the client is being prepared to initiate ART) which meant that they tested and came to trust the appointment system more quickly compared to the family planning clients who only have appointments every 2 or 3 months. This hypothesis could only be tested over time and as the intervention was transferred to other services with different time intervals between appointments.*

In this vignette, the use of management cycles can be observed (illustrated in Figure 7.3), as well as the generation and use of different types of information and knowledge. Formal data from the HIS was used to identify the problem of low family planning coverage. In the first task team meeting, the initial discussions involved problem solving, which identified poor staff attitudes and long waiting times in clinics, a pervasive complaint across the health services, as contributing reasons for low family planning coverage too (*know-why*). Strategising led to the decision to implement an appointment system to reduce waiting times. The implementation of this strategy and its impact were monitored through report-backs from each facility manager at the next meeting. The reflection on the experience surfaced very useful knowledge. Rather than stopping at a “it works or it doesn't work” assessment, the reflection allowed deeper probing of the experience to understand how it worked, which led

to the insight that a lag period was to be expected (*know-how*); the role of client-provider trust emerged (*know-why*), as well as an understanding of the circumstances that enabled trust to be built (*know-when*) – in this instance short intervals between appointments and consistent experience that the health facility honours the appointments.

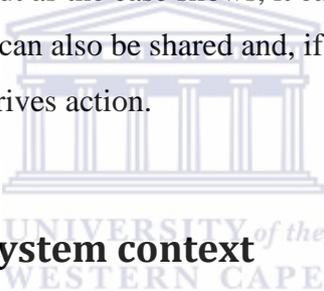


**Figure 7.3. Use of reflective learning in generating *know-how* and *know-when***

Legend: Italicised text in square brackets is the information and knowledge that was used

During 2012 and 2013, the RH project presented facility managers with a number of novel situations, all of which had the potential to generate new experiences which required interpretation and presented an opportunity for learning in the monthly meetings; in expressing and uncovering lessons through peer discussion, new knowledge was made explicit and collective (it was generated and acquired by the group rather than by particular individuals).

This case illustrates how information and knowledge are used and (can be) generated in programme management. The experience of management (i.e., undertaking one management cycle and reflecting on the results) is able to generate rich *know-how*, *know-why* and *know-when* in addition to the *know-about* facts or information. This is typically informal information not codified in SOPs but increasingly recognised as valuable in managing programmes that aim to be responsive and acceptable to the population as well as to the staff. Some of the information is tacit, but as the case shows, it can be made explicit through reflection. When made explicit, it can also be shared and, if accepted by peers, become part of the collective knowledge that drives action.



## 7.9 Influence of health system context

This section will describe how the health system context, as evidenced within the subsystems, influenced how facility managers made decisions and what information they used. The nature of these subsystems, the processes they required facility managers to follow, and the values they promoted, all influenced the information that was available and was prioritised in decision-making.

### 7.9.1 Governance and leadership

The national, provincial and local spheres of government had enacted policy and created processes and structures to support the use of formal information from the HIS. The national frameworks for strategic and operational planning such as the Framework for Strategic Plans and Annual Performance Plans (National Treasury, 2010a) and the Guide to the Outcomes Approach (Department of Performance Monitoring and Evaluation in the Presidency, 2010)

promoted the use of formal information and the setting of targets in rational planning processes as part of “results-based management”. Programme performance information was valued in national frameworks for monitoring and evaluation, such as the Policy Framework for the Government-wide Monitoring and Evaluation System (Department of Performance Monitoring and Evaluation in the Presidency, 2007b) and the Framework for Managing Programme Performance Information (National Treasury, 2007) as a means of strengthening accountability. Formal information from the HIS was made central to the PDR and performance management processes, which modelled and reinforced the active use of RHI at all levels of the health system.

At district level, managers in the two organisations gave similar high priority to promoting the generation and use of good quality information. At the sub-district/substructure level, this was more actively managed in City Health, where the sub-district manager made it one of her priorities in the monthly management meeting with facility managers. In MDHS, on the other hand, while the appointment of the substructure Assistant Deputy Director for Health Information signalled the intention to improve this, the effect had not yet become evident during the time of the observations done in this research. Consequently, City Health facility managers devoted more time and adopted a more hands-on approach to validating their data, and understood their facility data and data processes better.

In both organisations facility managers were not involved in setting targets and, as described further in Chapter 5 - Findings: Understanding the Context, felt that many of the targets were unreasonable. Attempts by facility managers to engage with, and modify, the targets they felt were unattainable (e.g. discussion at the sub-district/substructure management meeting and presenting a letter of motivation in a one-on-one meeting), were not successful. They spoke about conflict over targets and about being at “loggerheads” with the sub-district/substructure. This also created some antagonism towards the use of formal information from the RHIS in monitoring activities. Facility managers felt that unattainable targets demotivated their staff at a time when they were also trying to improve staff morale to improve productivity. Facility managers were also concerned that the current targets focused attention on extending programme coverage rather than on improving programme quality. They gave more time to the management of coverage targets, because these were prioritised through the PDR and performance management systems, and they were concerned that this

was impacting negatively on the quality of services rendered. Tools to assess whether facilities had functional systems, or were equipped to offer a quality service, were regularly used; these included the Quarterly Management Tool, which was used in a monthly supervisory visit. However, the tool was onerous to complete and the checklist approach did not allow for deeper problem solving.

Facility managers characterised the approach to management in the sub-district/substructure as “target-orientated”. In MDHS, this was spoken of as a more recent development that staff and managers were still adapting to, whereas in City Health it was seen as a long-established management approach. In both organisations, facility managers reported that they had had to manage instances where staff modified and inflated statistics (a practice which has been referred to as *gaming* the system), and this they attributed to an over-emphasis on targets at the sub-district/substructure level. They perceived this orientation as unrelenting and potentially punitive towards themselves and their staff alike. They also felt that the target-orientation meant that the sub-district/substructure support agenda was largely shaped by the RMR and by progress towards targets. This was seen in, for example, the City Health one-on-one supervisory meetings, and meant that facility managers did not receive support in other areas they identified as important, such as managing difficult staff members.

Within both organisations, sub-district/substructure managers recognised the key role of facility managers in strengthening health services, and were supportive of the notion of creating reflective spaces for them to engage in learning and in peer support. For example, within the DIALHS project, they negotiated opportunities for facility managers to receive coaching that embraced a reflective learning approach and, in City Health, the reproductive health project specifically enabled facility managers to think together on emerging learning. Routine sub-district management meetings with facility managers did not, however, offer sufficient space for reflection, and facility managers described an organisational culture that often did not value those voices that were critical.

### **7.9.2 Health Information System**

Within the health department, the HIS has been developed by all three spheres of government specifically to provide decentralised routine information to inform planning and form the

backbone of monitoring activities. Various strategies and initiatives for the ongoing development and strengthening of the HIS (as described in more detail in Chapter 5 - Findings: Understanding the Context) provide the evidence for its having been made a focus of management attention. Facility managers were influenced by this: they too valued the use of formal information from the HIS in decision-making, despite feeling some antagonism towards targets that seemed unattainable.

District efforts to improve the quality of the HIS had a dual focus: first, to reduce the number of data elements in a large and unwieldy data-set and, second, to introduce standard operating procedures with clear responsibility for data processes, including validation. At sub-district/substructure level, the attention given to improving the quality of the reduced minimum dataset (MDS) meant that, at the time of this research, the work of health information officers was strictly focused on the MDS and did not cover other aspects of data which would be considered a part of the HIS, such as periodic programme audit data. As they did not see themselves as custodians of a broader HIS, but of the smaller subset of RHI, they did not offer support to facility managers in generating, interpreting or holding for future retrieval, any information outside of this narrow focus. This shaped the information available to facility managers for decision-making. For example, new facility managers struggled to find the audit reports of HAST audits for previous years.

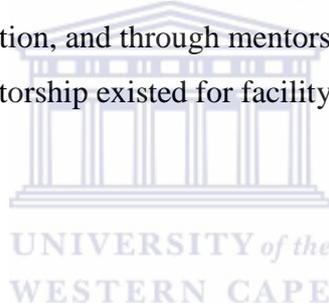
Standard operating procedures were introduced, and made facility managers responsible for “signing off” facility RMR data submitted to the sub-district/substructure office. In doing so, they declared that they had overseen the data collection processes and that the data formed a true reflection of the activities measured in their facility. The facility managers, rather than the health information officers, therefore bore the responsibility for ensuring that the data had been validated. Facility managers spoke of the importance of validating the data, how time-consuming it was, and the trade-offs made in finding time to do the validation. Other management responsibilities, such as doing clinical governance audits or routine paperwork associated with managing absenteeism, were left unattended to.

*But validating is a nightmare .... It doesn't happen unless I check. Validation is very time consuming. We need to try to do (it) weekly but we are always in a meeting; we are always here, we are always there. (Index facility manager A, interview 3)*

The facility managers often used the parallel systems to correct data rather than to correct the HIS data processes. No data was kept in facilities from month to month, or about the discrepancies between data-sets, to monitor whether the HIS data processes were being improved. Instead, the parallel data systems became entrenched, and during this research period, possible validation checks were expanded. This was not efficient.

### **7.9.3 Human resource management**

Despite various attempts to develop an induction programme for facility managers, this had not been sustained in MDHS. In City Health, a programme was run by the sub-district and included some sessions on data validation, programme monitoring and evaluation and quality improvement processes. In both organisations facility managers learnt much of how to work with formal information on the job, with PDR processes giving opportunities for learning through modelling use of information, and through mentorship (both by management and by peers). No formal training or mentorship existed for facility champions, portfolio managers and HODs.



## **7.10 Summary**

This chapter has described the case of managing programme priorities and has identified three focal areas of management: validating routine information, managing programme coverage and managing programme quality. While the role of formal information was very strong in this case, informal information gathered through interactions with HODs and observations was also evident. Learning from experience and reflective practice emerged as highly important in adapting strategies of programme implementation. Formal and informal information were also seen to work together. Leadership and governance within the sub-district/substructure was a strong contextual influence on the use of information; furthermore, the health information system itself operated as a contextual influence on what information was accessible and what information use was supported.

The next chapter deals with the third case: managing leave of absence.

# Chapter 8. Findings: Managing Leave of Absence

## 8.1 Introduction

Absenteeism was high in both organisations at the time of this research and had been identified by district managers as a long-standing problem that had been poorly managed for many years in the district office. The decentralisation of the management of absenteeism to facility level was, in part, recognition that the centralised management of absenteeism had not been effective. The district required the sub-district/substructure and facility managers to prioritise the management of absenteeism: it was identified as a lever for health system strengthening because of its magnitude and impact on health service delivery.

Unplanned leave was seen as the main challenge as it was more open to abuse and, with the generous sick leave entitlement (80 and 36 days per three year cycle respectively, for City and MDHS), it had great potential to disrupt service delivery. All the facility managers recognised the problem and could describe instances of staff members who were potential abusers of their sick leave entitlement, either because of their patterns of unplanned sick leave usage, or because they had exhausted their sick leave entitlement before cycle end. They also described pervasive practices that had come to be seen as part of the organisational culture, for example, staff seeing sick leave as an entitlement to be taken whether they were sick or not; or, some staff using sick leave as a means to retaliate if they felt ill-treated by colleagues unfairly taking unplanned leave and leaving them subjected to high workload. The problem of staff shortages (not having sufficient staff on duty to meet the service delivery needs) was often the result of high rates of absenteeism.

Facility managers recognised that the management of planned leave was important in reducing unplanned leave. The most common reasoning reported for this conclusion was that when there was inadequate management of vacation leave and inadequate or insufficient training, and too few staff left to cover services, the remaining staff became *burnt out* leading to an increase in unplanned leave. Also, severe staff shortages resulting in service delivery crises were described to occur most often when there was unplanned leave in addition to planned training or vacation.

### 8.1.1 Defining the case

In keeping with the City of Cape Town and Western Cape Provincial Government human resource policies, absenteeism is defined in this case as “an absence from work, whether planned or unplanned, for a full day or part thereof”. The types of leave of absence covered in the policy are shown in Table 8.1. This case explores how facility managers used information in managing three of these: sick leave (as an example of unplanned leave), vacation and training (as examples of planned leave). While sick leave was unplanned, it still had to be authorised on the day. These three types of leave of absence consumed most of the facility managers’ attention.

**Table 8.1. Areas of leave of absence covered in the human resource policy**

	Planned leave	Unplanned leave	Time management
Included in case	<ul style="list-style-type: none"> <li>• Training leave</li> <li>• Vacation leave</li> </ul>	<ul style="list-style-type: none"> <li>• Sick leave</li> </ul>	
Excluded from case	<ul style="list-style-type: none"> <li>• Maternity</li> <li>• On-going, prolonged sick leave</li> </ul>	<ul style="list-style-type: none"> <li>• Family responsibility leave</li> </ul>	<ul style="list-style-type: none"> <li>• Start and end times</li> <li>• Tea and lunch breaks</li> </ul>

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This case excludes other types of absenteeism that are covered in the human resource policy as they did not add substantially to the understanding of how managers use information either because the facility manager had little decision-making power (the management of maternity leave and prolonged sick leave), or because they were too similar to an included case (the management of family responsibility leave was similar to sick leave and, with fewer days of leave entitlement, was less of a management concern). The management of time at work (late arrival, early departure and prolonged tea and lunch breaks) is excluded from the case as there was overlap with managing efficiency of service delivery (covered in a separate case: managing efficiency of service delivery). In MDHS some facilities relied heavily on locums to ensure coverage of their routine service delivery; this is not included in the case.

### **8.1.2 How managing leave of absence is linked with other cases**

This case overlapped with both other cases: *Managing Programme Priorities* and *Managing Efficiency of Service Delivery*. When staff were absent, client waiting times were increased, services outputs were reduced and, if the staff shortage was severe, clients were deferred. Facility managers often simultaneously engaged in managing leave of absence (e.g. cancelling training or recalling staff to the facility) and managing efficiency of service delivery (reducing client intake, managing flow and reallocating work). This case is concerned with how facility managers used HR processes to manage their staff, rather than with how they managed the immediate impact of leave of absence on service delivery.

High absenteeism impacted on programme management, because skilled staff are the main scarce resources in the delivery of programmes. Many of the strategies to improve programme performance required adequate staffing levels. First-level managers had also responded to staff shortages by personally taking on service delivery roles (delivery of programmatic services in City Health, and triaging in MDHS), which reduced the time available for their managerial tasks; in particular, attention to proactive planning and resource stewardship responsibilities. For example, in City Health, the asset registers remained poorly managed over a four month period of observation in 2012; in this period, the facilities were often severely short-staffed and facility managers did clinical work, despite repeated requests from the sub-district manager to make management of asset registers a priority. At times, lack of equipment impacted on programme delivery and created service delivery inefficiencies.

## **8.2 Managing leave of absence**

The first-level index City Health facility managers sought to actively identify and manage individuals with excessive leave. They were also aware of a need for developing facility-level strategies to improve work climate and build team-spirit in a complementary approach to reducing unplanned leave.

The MDHS index facility manager had implemented a multi-pronged strategy to reduce leave of absence over the three years of 2011-2013. She focused on improving the management of

planned leave, i.e., vacation and training, requiring her HODs to submit annual vacation plans. She also focused on managing unplanned leave, and had developed a facility-level database to track leave usage. She presented summarised leave data for discussion and problem solving at HOD meetings, involved representatives from the trade unions and substructure labour relations in educating staff on their leave rights and responsibilities, and also paid attention to staff morale; this she did through quarterly team-building sessions and a programme of group trauma debriefing (having identified a pervasive sense of staff being overwhelmed and traumatised by ongoing organisational change, perceived high workloads and experiences with clients); she also interpreted the high absenteeism rate as a result of low staff morale.

All second-level managers worked together with their HODs in managing the HR leave processes; however, they found that many HODs were reluctant to take on this aspect of line management:

*You see the HOD's must be empowered. Because for us to be empowered, to know how to do stuff, and then the thing gets stuck by the HODs and they are not taking responsibility of enforcing the policy. (Peer facility manager, MDHS workshop 1)*

The failure on the part of HODs to accept responsibility for the HR processes meant that much of the responsibility reverted back to the facility manager:

*[Developing a Workplace Skills Plan] does work, it's just that some HOD's are not really with it so they will just give people, if people get the list and they sign for, they just give them to sign even if it's things that are not relevant ... So that gives me a hard time because now I have to go through each and every - but if I knew I could rely on the HOD's it would be easy for me to just check, sign; but now I have to go through each and everything "does this person really need this?" you know? (Index facility manager D, interview 3)*

## 8.3 Focal areas of decision-making in managing leave of absence

This section describes the key decisions in each of three focal areas in managing leave of absence: managing unplanned leave, managing vacation leave and managing training.

### 8.3.1 Managing unplanned leave

#### Processes involved

In both organisations, policy documents stipulated that staff members had to request permission from their managers to take unplanned leave; in large facilities this was delegated to the HODs. As described in Chapter 5 - Findings: Understanding the Context, staff members were required to submit a leave application form when they returned to work, together with a sick certificate if they had been absent for three or more days. In both organisations, first-level facility managers were responsible for identifying individuals and departments where excessive unplanned leave was taken, or where the pattern of leave usage suggested abuse. Most first-level managers and some HODs used Staff Leave Profile forms and found them sufficiently easy to use to identify patterns of leave usage. The staff leave profile was a pre-prepared grid of the days of the month (each month being shown as a row) which was completed for each staff member. Blocks representing each day were filled in using different coloured highlighters representing being on duty or absent as a result of sickness, family responsibility, training, vacation. (For an example of a completed Staff Leave Profile, see Figure 8.1).

Facility managers were responsible for the further management of staff members with suspected abuse of leave or prolonged leave usage which might signal *incapacity to perform duties*.

#### The facility managers' experience

Despite the policy requirement that staff phone in to the facility to request authorisation of unplanned leave, in 2012 facility managers in both organisations reported that many staff members persisted in simply leaving a message that they would not be able to attend work, without speaking to their line manager or receiving formal permission. This practice had become acceptable and widely practiced prior to the promotion of the policy, and proved

difficult to shift after introduction of the policy. Most facility managers reported that, in order to achieve compliance, they had had to threaten to make such leave *unpaid*, unless the staff had received permission for it from their line manager; they also felt that the managers had to be seen to carry through on this threat.

Second-level managers found that working through the HODs added another level of complexity in implementing this unpopular policy. For example, the MDHS index facility manager, in speaking of managing this policy, said:

*The HODs are very reluctant to discipline people. It takes a long time to understand that they need to discipline a person. By disciplining the person you're not condemning them, you're showing them what needs to be done better. You are just trying to correct the wrong doings.* (Index facility manager D, interview 3)

She reported that she had raised this issue repeatedly in HOD meetings in 2012:

*Staff will continue [to abuse leave] if you don't discipline ... You [the HODs] are making it difficult for this place to be governable. People have no sense of right or wrong. You cannot please everyone; that is not leadership.* (Index facility manager D, observation of monthly HOD meeting)

The facility managers and HODs based their decisions on granting permission for unplanned leave dependent on the reason given by the staff member for why s/he could not work, on their knowledge of the site's service needs, and on the staff complement. Some facility managers reported instances where they had refused leave requests because of high service demand; however, most facility managers felt that it was not possible to do so if a staff member claimed to be sick, as workers had a right to sick leave.

In order to categorise the leave as *unpaid leave* (permission not granted or sick leave entitlement exceeded), sick leave or family responsibility, facility managers would have to have information on the circumstances of the leave and the staff members' current leave entitlements. Facility managers and their HODs in both organisations were slow to take on the responsibility of managing leave of absence. In part, this may have been caused by reluctance to implement the unpopular policy of unpaid leave; it may also have been caused

by their not having access to up-to-date information on how much remaining leave any staff member had in each leave category. When facility managers requested information on remaining leave entitlement from the sub-district/substructure, they found that the databases were often not up-to-date, as leave applications were still waiting to be captured, or because leave application forms were sometimes lost in transit. This meant that information from the HR database had to be used cautiously.

The City Health policy required that the reason for the proposed sick leave be documented on a sick certificate (although provisions were made for staff members to be reviewed by in-house doctors if they wanted to keep the diagnosis confidential). One facility manager recounted an incident which showed how she had used her medical knowledge - acquired during her education and her subsequent experience working as a professional nurse - to query the medical trustworthiness of a medical certificate. She queried why a doctor had booked an ambulant patient off work for eight days for chest pain; from her medical training and experience, she knew that chest pain requiring a significant amount of time off would be caused by a potentially severe condition, requiring investigation and hospitalisation or at least specialist referral. As the staff member had not received any such care, she suspected that the real reason for the doctor giving so much time off was not being declared. She suspected that the staff member was abusing her sick leave because earlier in the year, after the staff member had exhausted her 80 days sick leave, she was seldom off sick; but recently, now that she had entered a new sick leave cycle, she was again taking long periods of sick leave. The facility manager was basing her suspicions on carefully recorded observations of patterns of sick leave usage over time, and an interrogation of the information on the sick leave form, drawing on her clinical nursing training and experience.

In the following example, a newly-appointed facility manager, new to the process of identifying potential abuse of sick leave and so not able to draw on professional experience in assessing whether the sick leave usage was excessive, brought her own personal experience to bear as a comparison, and on that basis decided that an *incapacity hearing* was warranted.

*The facility manager reports that she has a staff member who has already used up 72 days leave in the three-year cycle. The facility manager draws on her own personal experience, saying that she herself has had three operations in the last three years, and has only taken 56 days sick leave. This person has had no operations. The facility*

*manager has shown the staff member her own personal leave profile as a comparison, and has asked the staff member why she has taken so much more leave. Her interpretation of the leave pattern is that the staff member sees it as her entitlement to take sick leave and that she won't listen to her line manager who is telling her not to take so much leave. She has decided to call an incapacity hearing to probe this further. (Index facility manager B, interview 2, notes)*

Facility managers in both organisations struggled to use information in the official databases to identify staff that potentially abused their sick leave entitlement or were at risk of running out of sick leave, and needed to be carefully managed. In City Health, when they requested information from the HR clerk, they were given raw data counts of leave taken per individual in each leave category. This then had to be compared with the starting date of the staff members' leave cycles, which followed from their date of employment and made it very difficult to compare leave usage between staff members. In MDHS, leave information was available in the parallel substructure Leave database, the Facility Leave Register, which they had access to in their facilities. MDHS facility managers were however constrained, as standard indicators were still being developed at the time of this research, and they had limited experience in interpreting the information over time. They tended to still use counts of leave days taken. In MDHS, leave cycles all started at the same time, so it was possible to compare staff on the basis of these counts.

Some facility managers with smaller staff complements used the leave profile forms to monitor the number of days leave taken (per leave category) by each staff member. For example, one first-level facility manager, who kept meticulous sick leave records, kept the current and previous year's staff leave profiles for each staff member on record. She marked the start of the new sick leave cycle on the staff member's staff leave profile (in City Health, the sick leave cycle was a three year fixed cycle, which started in the month of employment). The leave profile form was also used to identify patterns of leave usage suggestive of abuse. One facility manager demonstrated how she did this:

*See [staff member] doesn't take off just one or two days, she likes to take off the week or she'll come and work the Monday because I've told her 'You're an "after-a-weekend special". You like to take off sick.' So now she'll come and work the*

*Monday. ... So I'm showing [them] their pattern that I've picked up so they can know that I know, yeah. (Index facility manager A, interview 3)*

Facility managers with larger staff complements reported that the task of keeping the Staff Leave Profile Forms up-to-date was too onerous: they were not filled in accurately enough to be a reliable data source. Second-level managers found it difficult to monitor how well the forms were being completed in each department, and how active their HODs were being, in using the staff leave profiles to detect abuse and excessive use. Second-level managers reported becoming aware of potential problems when they signed off the leave application forms, and found that applications from certain staff members appeared frequently.

Initially, City Health facility managers thought the back-to-work interview was only required in instances of prolonged leave. Only when they went through in-house training, more than one year after the introduction of the policy, did they realise that this was required in all instances of unplanned leave. Many of the facility managers found that the template provided by the sub-district office for the back-to-work interview was a useful way of documenting and subsequently tracking the amount of unplanned leave taken; this included the reasons for each episode, what counselling was done, information given, or supportive strategies (devised by the facility manager in consultation with the staff member) to reduce unplanned leave. They also used the interview record to keep a tally of leave days taken from one interview to the next. Those with larger staff complements did, however, experience these interviews as an administrative burden, and complained that they were often behind in conducting the interviews. As facility managers began taking on the role of actively managing staff through the step-wise approach, they began to move from having a file for each type of record to developing an individual-based filing systems for keeping leave and counselling records. At the time of this research, this was not a standardised procedure and was evolving organically.

As facility managers gained experience in managing staff through the step-wise approach, they gained confidence. Box 8.1 illustrates how this first-level facility manager learnt to manage a staff member with excessive sick leave usage. She accredited this learning to her readiness to try various strategies, and to her use of formal information from the sick leave profile to monitor progress in reducing his sick leave.

### Box 8.1. A first-level manager managing an individual to reduce leave of absence

*Constructed from researcher notes made during observations in Facility A and from interviews with the facility manager between 1 August 2012 and 6 November 2012*

*Staff Member X had a chronic chest condition and soon used up most of his leave entitlement. As part of a facility-wide strategy to reduce unplanned leave, the facility manager first focused on ensuring that he phoned in to ask her permission each time he wanted to take unplanned leave. From around May 2012 she began to encourage him to have acute treatment when his chest was bothering him in the early mornings, but to still report for duty later in the morning. This meant that he only lost a couple of hours which he could work in later, rather than a full day. When she felt that he was staying off work unnecessarily long, she began to confront him. July 2012 she refused him paid sick leave as he had not phoned in. She found that he responded well to an approach which combined active, personal supervision; an ongoing conversation each time he was off or late; clear boundaries setting; and the introduction of punishment within a carefully managed process.*

*The facility manager had learnt very specific 'know-how' to manage a particular individual. She learn[t] to interpret his patterns of sick leave usage so that she knew the conditions to be strict with him ('know-when'). She used his staff leave profile as a tool in monitoring him and providing him with feedback on his performance.*



**Figure 8.1. Staff leave profile to illustrate patterns of absenteeism**

*At the peer workshop on managing leave of absence (City Health Peer Workshop, 17 July 2013) she presented the data in graphical form to show how successful the intervention was. Absenteeism was calculated as the number of days absent (numerator) out of the number of working days in that period (denominator).*

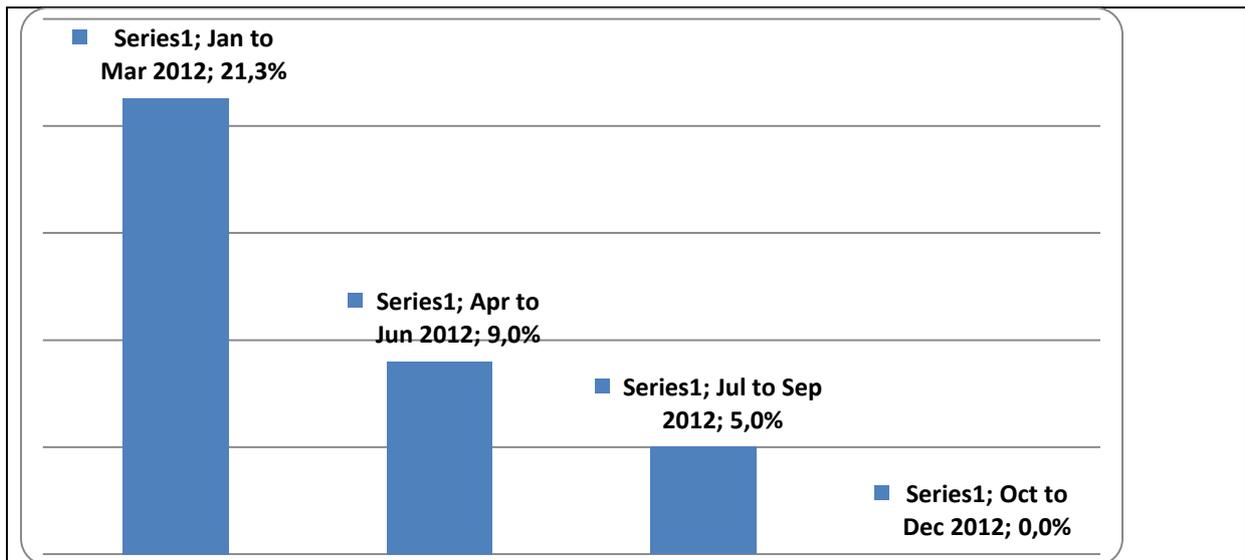


Figure 8.2. Absenteeism of staff member X in response to absenteeism-reduction intervention

The key decisions in this focal area (managing unplanned leave), were as follows:

- A. Identifying potential abusers and excessive users of sick leave: The facility manager used formal information from the staff leave profiles, back-to-work interviews, leave application forms and, in MDHS, the parallel substructure database. The official HR database was seldom used.
- B. Managing leave of absence at facility level: the facility manager used information from HOD verbal report-backs on progress and experience implementing strategies to reduce leave of absence, as well as local and context-specific knowledge regarding staff motivators and needs.
- C. Managing individuals with high leave of absence: the facility manager used local information about staff members gained from experience of working alongside and managing the member and through counselling and disciplinary processes (information that was local *know-about*, *know-why* and *know-when*).

### 8.3.2 Managing vacation leave

In both organisations, facility managers intended to draw up an annual vacation leave plan in December for the following year, based on the leave dates requested by staff members, to ensure adequate staffing mix and levels throughout the year for uninterrupted service delivery. In smaller facilities this was the responsibility of the facility manager, while in

larger facilities it was delegated to the HODs (each department was to have its own plan). However this act of *leave scheduling* in advance was often not completed, or was only done much later in the year.

First-level facility managers across both organisations differed in how they started the leave scheduling process. Some made a blank leave schedule available in a staff meeting, for staff to fill in and discuss on the spot. Others placed the blank schedule in their office and asked staff to complete it. Where there were clashes with staff members requesting the same period, most facility managers referred to the staff members' previous leave history (e.g. seeking to alternate the *sought after* Christmas and New Year periods) and considered their personal circumstances (e.g. which staff member had school-going children, knowing who valued which cultural practices). These are examples of the use of highly local and particular information, which were gained by first-level facility managers investing in hearing the motivations that staff gave when they requested leave, sometimes remembering these from year to year and getting to know the life stories and circumstances of their staff. It is highly local information, particular to each staff member.

First-level facility managers also spoke about practices they used to ensure that the leave allocation was considered to be fair by their staff. One described how she ensured that the leave requests were visible to all staff; a second discussed how she allowed peer arbitration regarding what was fair and a third, who had only been in the facility for two years and who felt that she did not have sufficient historical information (know-about) to make the process fair, described how she drew on the collective memory of her staff:

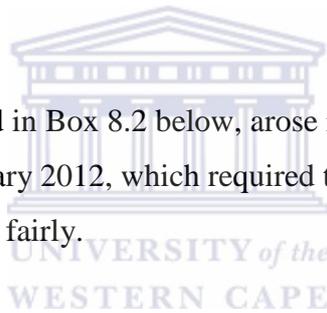
*And then if there's a clash then I let them sort it amongst themselves, do you understand? Because they are the ones that have been (at this) facility for so long; because now it's usually not just about last year, it's about the previous year - what (leave) you have the previous year ... I don't have that information. (Index facility manager C, interview 2)*

In both organisations, the taking of vacation leave was not strictly according to schedule but was managed according to the operational needs at the time leave was due to be taken. Service requirements had to be prioritised (supported by policy). Also, training on the *Work*

*skills plan* had to be accommodated, resulting in vacation leave being postponed, and at times staff requested changes.

The leave application process required staff members to submit their leave application forms five working days before the intended leave. It was at this point that the facility manager would check to ensure that the leave could be accommodated, given service needs, training booked and anticipated sick leave. In larger facilities, some second-level managers delegated this to their HODs but found that it was poorly managed, with HODs reluctant to recommend or not. Also the forms were often submitted too late to follow all the processes. The MDHS index facility manager reported that she often only received forms on Friday afternoon for staff starting leave on Monday. The late submission of forms caused her to work overtime and did not give her any time to query the leave applications with the relevant HOD or allow her to check the leave request against the database of leave taken, and the entitlement remaining.

An interesting situation, described in Box 8.2 below, arose in the index MDHS facility at the end of the financial year in February 2012, which required the facility manager to use knowledge in deciding how to act fairly.



**Box 8.2. The use of knowledge in developing a staff leave contingency plan**

***Observation notes taken on 12 June 2012 during HOD meeting at Facility D***

*A large number of staff had not taken all their leave for the year. The substructure HR office only brought this to the facility managers' attention in May 2012. It was tabled as an agenda item in the index MDHS facility's HOD meeting in May where it was reported that the substructure had granted staff until the end of June 2012 to take the leave, or they would forfeit it. HODs reported that they had too many staff requiring leave to be accommodated within the period of grace as it would be impossible to cover the operational needs of each department. A decision was then taken in the HOD meeting to accommodate as much leave before the end of June as operationally possible and then to submit leave applications for the remaining outstanding leave dated before end of June, though they would be taken later. The MDHS index facility manager instructed her HODs to inform the facility office of the actual leave plan and dates taken so that a record could be kept.*

The decision to accommodate outstanding leave was informed by factual knowledge of the facility: operational requirements meant that all standing requests for leave could not be accommodated within the grace period. It was also informed by broader knowledge understanding the reasons how the situation arose: the practice of not using all one's leave

but keeping a week in reserve in case of personal need arising towards the end of the leave cycle, was condoned as good and responsible leave stewardship; HODs, not staff, were responsible for insufficient planning of leave allocation throughout the year; HODs were not supported by a functional HR information system regarding outstanding vacation leave entitlements (at that stage, it was still being developed). The decision was also informed by an understanding of the negative consequences of denying staff leave; although not explicitly stated in the meeting, it was understood that staff morale would be weakened if staff were not able to take their leave entitlement and this would impact negatively on service delivery; another item on the agenda of this meeting was team-building which included discussion on strategies to improve staff morale. The facility manager knew how the leave system worked, and how to satisfy the substructure requirements (dating leave applications to fall within the stipulated period) while still ensuring accountability at facility-level; (HODs had to notify the facility manager's office of the actual leave dates taken, so that this could be monitored and managed at facility level).

The key decision-making processes were as follows:

- A. Leave scheduling: The first-level facility managers and, in larger facilities, the HODs used local know-about and know-how gained from experience to develop leave schedules. Second-level facility managers working through their HODs either had HOD meetings, or on-the-spot consultations with individual HODs, to monitor whether HODs had submitted leave schedules.
- B. Recommending (City Health) and authorising (MDHS) leave: The facility managers reviewed each individual staff member's leave application and decided whether to recommend (City Health) or authorise (MDHS) it by "signing off". The facility managers used information about the service needs (know-about and know-when knowledge) in relation to staff available, taking into account staff who were sick or scheduled for training. They also used knowledge about the particular staff member applying for leave, information which was local *know-about* the individual, in the context of the particular time, work history and needs (know-when). Second-level managers in MDHS looked at whether leave was recommended by the HOD.
- C. Developing contingency plans to accommodate leave not taken (MDHS only): the index facility manager decided to allow staff to take outstanding leave beyond the stipulated period (six months after the annual vacation leave cycle). The information

informing this decision was local and contextual know-about and know-why knowledge, about the circumstances giving rise to the problem, and how the loss of leave would impact on staff morale and subsequent service delivery. There is also procedural knowledge (knowing how to work around the substructure stipulations, while ensuring adequate oversight at facility level).

### **8.3.3 Managing training leave**

The district required the development of a Workplace Skills Plan (WSP) in the management of training in both organisations. In City Health, the responsibility for developing this plan lay with the facility manager, while it was often a delegated function in MDHS. In both organisations, the plan was supposed to build on a Workplace Skills Audit conducted and maintained by the facility manager, which identified staff skills and the gaps in relation to operational requirements. In larger facilities, these audits were often not updated. In smaller facilities, they were often only updated when the WSP was done. In MDHS, the WSP was also supposed to be linked to the individual staff members' personal development plans; this was part of the performance management system for all staff.

The City Health Workplace Skills Plan 2012/2013 had to be submitted in April 2012 for the financial year beginning in July of that year. Guidelines proposed that staff would be allowed to attend a maximum of three courses taking up to 10 days of study leave; this leave entitlement was referred to as the "capped leave". However, additional days of training leave would be made available for staff to go on high priority courses, such as family planning which was designated as "uncapped leave". Some facility managers met with staff individually to discuss the course options, and used this opportunity to focus on individual staff motivation and personal development, while working towards the service needs of the facility. Other managers were less active and simply required staff to indicate the courses they wanted to be considered for on a form. The facility WSP was then sent to the facility manager supervisor, who would collate these for the sub-district. Not all facilities submitted their plans in time. On review of all the WSPs in the sub-district, some had to be amended as the following problems were identified:

- In some instances staff members were recorded for courses that exceeded the training leave entitlements (10 days)

- The total training budget for the sub-district was exceeded
- Training programmes for the sub-district and organisational priorities were not sufficiently subscribed to.

In the index MDHS facility, one of the senior staff was delegated the responsibility of coordinating the development of the WSP. HODs were required to first develop a Facility Performance Plan and an accompanying Skills Audit Plan for their departments, based on the service delivery needs and performance of their department. The Skills Audit Plan also had to inform staff members' personal development plans – a part of the performance management system. The HODs then identified courses for staff members aligned to the Skills Audit Plan and used them to develop a facility WSP; requests were submitted for the courses on a Log 1 form, (the general requisition form used for goods and services procurement). The facility manager then authorised the requests. In the 2012/2013 planning cycle many HODs failed to complete Skills Audit Plans.

In both organisations, facility managers spoke about ways in which their WSPs were subject to change and, sometimes thwarted by the district office; at the time of data collection, HR training remained centralised in both organisations. The district office reviewed all the sub-district/substructure WSPs and, based on demand across the district, and on the service priorities, made the final decision on courses to be offered and their scheduling. In City Health, a budgetary cut in 2013 after the WSPs had been developed meant that the final City Health establishment WSP, approved by the Executive Director, was much reduced: some facility managers felt that this undermined their facility processes of staff development and incentivisation. One facility manager reported that the cut in training had made it difficult for her to align her facility with the City-led strategy to increase family planning services. In City Health, a sub-district planned rotation of staff between facilities after the development and authorisation of the WSP; with staff moving between facilities, their planned training no longer matched the particular service needs of their new facilities. In MDHS, the plans embodied in the 2012 WSP were thwarted when one of the district trainers was not replaced during prolonged sick leave, meaning that many courses were cancelled.

In both organisations, the timing of the courses was subject to decisions taken by the training department, which was responsible for course scheduling throughout the year. While facility

managers attempted to prioritise sending staff on courses authorised in the WSP, they reported instances where staff could not be released for training because the facility was severely short-staffed at the time. In City Health, facility managers would first attempt to find a staff member from another facility in the sub-district to cover services; this involved negotiating with the other facility managers. If no replacement could be found, then she informed the facility manager supervisor, who took the final decision. Many short courses took place during the year that were not pre-planned but came about in response to policy guidelines being updated. Notification about these courses often happened very late, perhaps only a week ahead of time. In these cases, facility managers would be asked to nominate staff to attend. Here, the facility manager had more discretion:

*You get the notice now and you can actually say, actually I got people booked out on leave so I can't send anybody. (Index facility manager A, interview 3)*

In the absence of a sub-district training database, one City Health facility manager used the sub-district WSP to record WSP courses that her staff attended during the year. The establishment WSP listed all the employees of City Health who had been approved to attend courses for the year. She marked all her staff members with a highlighter and then wrote the dates against this, once the staff member had attended training. This was a local innovation to generate information. She used this information when she was required to submit data on training to the sub-district and district offices.

The key decision-making processes were as follows:

- A. Planning staff training on the Workplace Skills Plan: first-level managers did this based on local know-about information on individual staff members, including their course requests, personal development goals, training needs and the number of days study leave available, as well as service priorities and skills gaps identified in the Workplace Skills Audit. In addition, in MDHS, individual staff performance goals derived from the performance management system were also considered. Generally, up to 2012/2013, the facility managers did not consider budgetary issues. Second-level managers delegated the WSP to each HOD, sometimes with a lead person to coordinate the collation and administration of all plans from the HODs. Working through the coordinator and the HODs' meeting, the information she used to monitor HOD compliance was whether HODs submitted Work Skill Plans.

- B. Whether to release staff to attend unplanned training: the facility managers considered whether the course was a service priority, and whether the operational needs of the service would be met. They used local know-about information regarding what other staff would be on leave (sick or vacation), as well as context-specific know-when knowledge about how the absence of a particular staff member would impact on service delivery in the context of who else would be absent.

## **8.4 Use of formal information in managing leave of absence**

The four main sources of formal information used by facility managers are shown in Table 8.2, and described below. Each data source had certain uses, but fell short of what facility managers required in managing planned and unplanned leave.

In both organisations, the leave application forms became an important source of formal information and were stored in the facility (as copies) and the sub-district/substructure offices. They were referred to when there was a dispute or when the official database was queried. In the index MDHS facility, the facility-based Excel record with dates that leave was taken, was also found to be helpful in this regard.

In City Health, the use of raw data from SAP had a number of limitations. Firstly interpretation of the number of days taken was only possible in relation to how far the staff member was into their current leave cycle. Staff leave cycles were not aligned, running from the date of appointment, so a laborious and error-prone calculation was required when facility managers compared leave usage across staff. Secondly it did not automatically identify staff who had taken more than 12 days per year (the amount agreed as a warning signal). Thirdly, it did not identify patterns of leave usage which might suggest abuse of the leave system. While the City SAP database was capable of producing very useful, summarised indicator-based reports on leave usage, neither the sub-district office nor the facility managers were aware of this capability. In the absence of such reports and, in the case of MDHS, in the absence of reliable up-to-date information in the official HR database, facility managers turned to other data sources such as the Staff Leave Profile Forms (a long standing attendance

record) and the back-to-work interview records; as in the case of the MDHS index facility, they even created their own parallel databases. The parallel substructure database system (Facility Leave Register) was a substructure attempt to produce more reliable and relevant information to manage leave, in recognition that the information in the Persal system was too poor to use. As indicators were not yet standardised, these were not written in the Facility Leave Register software. In MDHS, the count of days leave was more useful than in City Health as the starting date for leave cycles was the same for all staff, irrespective of when they joined the organisation. In both organisations the colour-coded monthly Staff Leave Profile form was used to detect patterns suggestive of leave abuse, and the reliability was under the control of the facility manager.

The formal documentation of the back-to-work interview and step-wise approach to managing absenteeism (described in Chapter 5 - Findings: Understanding the Context) produced a paper trail of information regarding the reason and circumstances of the leave, and the underlying causes and interventions implemented to support the staff member. This information was useful for the ongoing management of absenteeism in the particular staff member. Most facility managers had a set of files of leave profile sheets, leave applications, copies of formal counselling and copies of disciplinary records which they kept in their office filing system. They also had a summary record of disciplinary hearing dates and outcomes. Many only had a rudimentary filing system for keeping this information. In addition they kept a staff communication book in which they entered informal counselling or instructions to staff; this book captured evidence of conversations which facility managers could use in dealing with subsequent infractions related to unplanned leave of absence. While these various documents constituted information useful to deal with absenteeism, there was no recommended system or set of procedures for systematically keeping or collating data relevant to the management of absenteeism on staff members, at facility level at the time of this research. The documents related to disciplinary processes were kept in the City HR (City Health) or substructure office (MDHS), which meant that this evidence was not as easily available to the facility manager, especially to new facility managers who did not know the system.

**Table 8.2. The usefulness and limitations of formal information available to manage leave of absence**

<b>Source of data</b>	<b>Usefulness</b>	<b>Key limitations</b>
<b>Leave Application Form</b>	Legal document from which leave data was captured Authorisation process gave facility managers an opportunity to informally identify high leave users	Raw, unsummarised individual data
<b>Staff Leave Profile form (City Health) Daily Indicator Sheet (MDHS)</b>	If accurately kept, then the number of days absent per leave category could be counted; easy visual representation of leave usage to identify patterns suggesting abuse  In MDHS, it was captured in a parallel database that gives the facility manager access to her leave data	Not always completed accurately In large facilities second-level managers relied on their HODs Parallel database not efficient though currently fulfilling a practical need
<b>Official HR database of staff establishment, leave and payroll (City Health – SAP; MDHS Persal)</b>	Identified the number of days absent per leave category Useful data source when investigating one staff member Would be useful if the customised summarised reports were accessed	Data capture from Leave Application Forms not always up to date and leave forms sometimes lost in transit  Current raw data report was cumbersome and only provided counts per staff member per leave category. It did not provide indicators, did not summarise data at facility level, did not allow comparison between staff members or facilities, did not represent data in graphs, did not show trends over time and did not identify patterns of possible abuse.  The City Health SAP system had the ability to generate summarised reports; MDHS system this still had to be developed.
<b>Substructure Facility Leave Register</b>		Parallel system; Indicators were still being developed and staff needed to be trained to interpret the indicators
<b>Workplace Skills Audit</b>	Able to identify skill gaps to prioritise in Workplace Skills Plan	Paper-based, administratively cumbersome in large facilities in its current form, often not up-dated or fully completed
<b>Communication Book; formal counselling records, Incapacity Hearing records</b>	Documents reasons for leave of absence, underlying problems and strategies planned to support the staff member to reduce leave of absence	No formal system for storing and bringing this information together at facility level.

One key management function which appeared to be neglected across both organisations was routine monitoring of how much leave was taken at a department level throughout the year, to ensure that all leave was taken by the stipulated time. HR information systems did not allow for this to be managed at facility level. In facilities with small staff complements, it is possible that facility managers were able to keep track of this informally and manage leave usage accordingly. However in larger facilities (some with more than one hundred staff members) second-level facility managers could not gather and retain this informally and, in the absence of functioning leave schedules, would have benefitted from a formal information system.

Another deficiency in the official HRIS information system was that neither organisation had a functional electronic record of staff training to support HRD planning, which meant that facility managers had to rely on a workplace audit which they conducted annually and tried to maintain during the course of the year by adding hand notes to a printed version.

## **8.5 Use of informal information in managing leave of absence**

The use of informal information is seen in how facility managers used rich, local knowledge about particular people in decision-making: this included their personal preferences and circumstances; their cultural identities; their vacation and training histories (all of which can be categorised as know-about); knowledge of when staff took unplanned leave and their reasons for doing so (know-why); and how they responded to what corrective action (know-when). This information and knowledge was generated in interactions with staff both individually or collectively, in a variety of processes. Some were informal processes, such as when speaking to staff over tea in the staff room. Even formal processes such as planning and negotiating schedules, doing counselling, HOD and staff meetings generated informal information, such as impressions and nuanced understandings of how well an individual coped with stress.

The use of procedural knowledge was important in all the focal areas of managing leave of absence. For example, facility managers required procedural knowledge to ensure that allocation of vacation leave and training opportunities was perceived to be fair by their staff,

to know how to interpret Staff Leave Profile Forms, and to ensure that the counselling process in managing unplanned leave was constructive and effective.

They gained this knowledge both from experience in their management practice, as well as from discussing experiences. This happened in peer workshops, as when the interpretation of leave usage patterns was discussed. It also happened in routine management meetings, for example, facility managers discussed how to manage the training schedule and how to respond to ad hoc training opportunities in the City Health management meetings. An understanding and agreement emerged that facility managers were obliged to allow staff to attend WSP scheduled training, and, if severely short-staffed, had to discuss this with the programme manager, and receive permission from her, if they felt that they could not release staff for operational reasons; however facility managers were able to decide independently if they could afford to release staff for ad hoc training courses. This difference was not formally documented but was procedural knowledge generated through discussions, and became known to those with experience of operating within the system, as well as those with whom this was discussed.

Managerial experience of practice did not always generate positive learning opportunities for procedural knowledge. One index City Health facility manager had four disciplinary meetings with staff members between June and December 2012. She experienced the meetings as confrontational and she felt that she had not received sufficient mentoring on how to approach counselling constructively. Another index City Health facility manager had two disciplinary meetings with staff in her facility during the same period, and chaired two disciplinary hearings for her peers. She felt that she had learnt a lot from these experiences, even though she had made mistakes along the way. Her approach had been to be honest with her staff, and had explained that, because the policy was new, she would have to learn together with them as she tried to apply it. She found that she learnt by returning to the policy when she had a difficult case to manage, so as to interpret again how the policy should be applied. She spoke about herself as someone who was not afraid to ask if she did not know, and someone who would not give up until she had an answer. She was quick to pick up the phone and ask questions of the City HR office, and the sub-district managers and peers with more experience. Her experience-based learning was thus supported by interrogating policy and undergoing supervision and peer mentorship. Within a year (2012 to 2013) she had

become a resource person for her peer group, who phoned her to check what form to use, and how the policy applied to various situations.

In this case, the use of causal and conditional knowledge emerged as very important in people management - in informing supportive, corrective interventions to reduce unplanned leave usage. It was also important in complex decisions, such as whether to allow vacation leave to be taken beyond the period of grace specified by the substructure (see Box. 8.2 The use of knowledge in developing a staff leave contingency plan). The facility manager based her decision on her understanding why the problem arose and what the consequences of not intervening would be on staff morale (know-why).

## **8.6 How formal and informal information are used together**

Formal and informal information worked together interchangeably in the management cycle in this case. For example, in identifying potential abusers of sick leave, and in the absence of useful reports from the HRIS, facility managers drew on formal (such as Staff Leave Profile Forms) and/or informal information (such as a sense of signing too many leave application forms for a staff member). Problem solving and strategising likewise drew on both types: facility managers used formal information, such as that emerging in back-to-work interviews and counselling processes, as well as more informal information gained from interactions with staff in a variety of routine management processes. The vignette of the first-level manager managing an individual to reduce leave of absence, described in Box 8.1 earlier in this chapter, shows how the facility manager used formal information from the Staff Leave Profile to identify abuse of sick leave, and further to monitor the individual. In her active management of the individual she gained knowledge about what management style he responded to and how to support him.

The story that follows in Box 8.3 illustrates the use of formal and informal information and knowledge together in the strategising stage of an instance of decision-making, whether a staff member should be allowed to take her scheduled vacation leave. The facility manager had the authority to cancel the staff member's leave if she did not have sufficient staff to cover service delivery requirements. She recognised a situation where she was likely to be

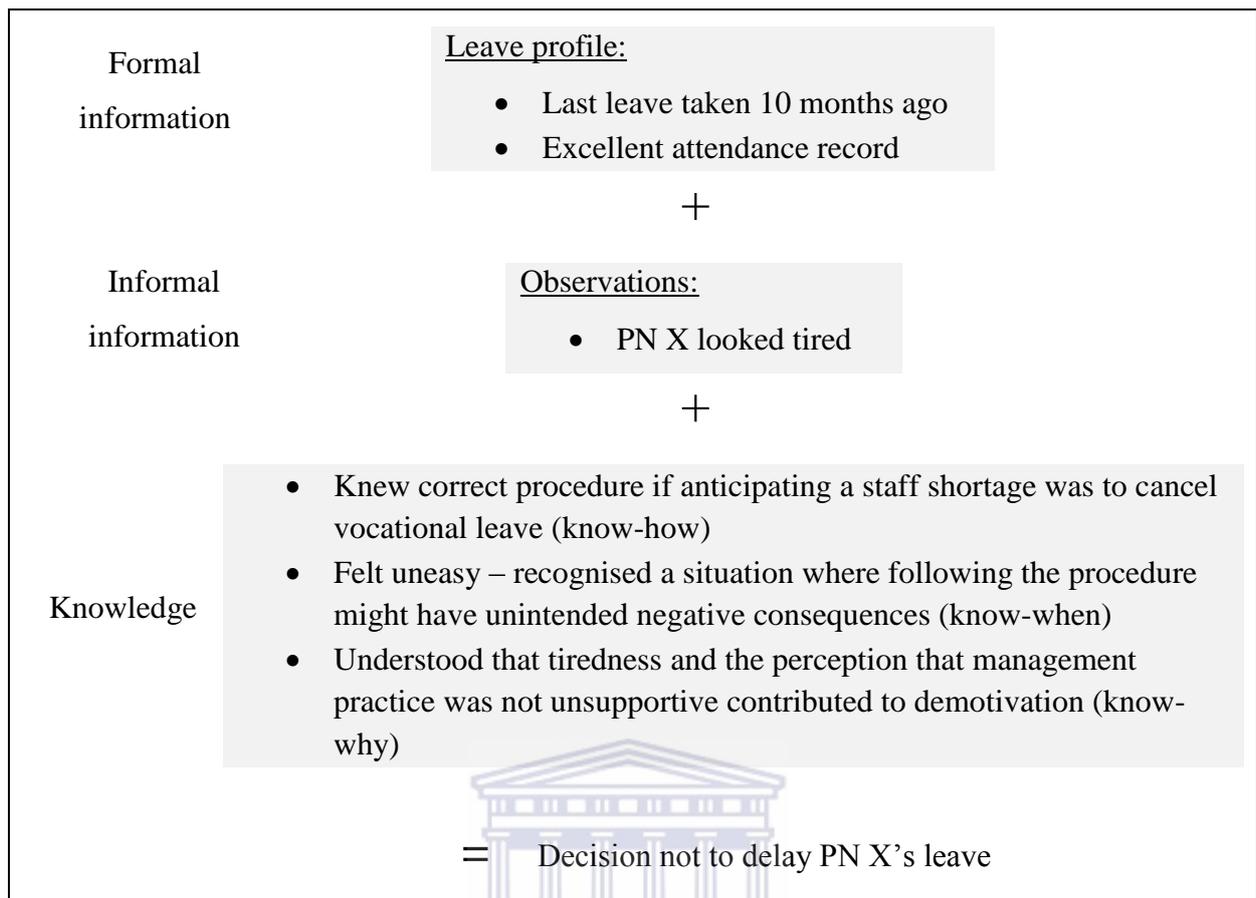
short-staffed and drew on a variety of different types of information and knowledge in making her decision.

**Box 8.3. Using knowledge about a staff member to decide whether to postpone leave in an anticipated staff shortage**

*Interview notes made by researcher on 19 November 2012 in interview with Facility Manager C*

*On Friday afternoon the facility manager knew she that she was potentially going to be short-staffed the coming Monday as she had one staff member who was ill and another whose child was ill in hospital (neither were showing signs of improvement) and a third staff member (PN X) booked for leave starting on Monday. At 12 noon on Friday she asked PN X if she would be prepared to delay her leave, and PN X agreed to, if it was required. The facility manager said she would confirm later in the day. However she felt uneasy as she thought that PN X looked tired. She then consulted PN X's leave profile and realised that PN X had not taken leave for 10 months and that she had had an excellent attendance record. She felt that, although PN X was tired, she had not taken any sick leave because she was holding out for her vacation leave. The facility manager was aware that staff sometimes took sick leave because they were tired or stressed; this was a practice that she was actively discouraging in the facility. She did not want to put PN X in a situation where this was the only way she was going to get a rest was to take sick leave. This could cause demotivation and encourage the very practice she was trying to reduce. She therefore decided to allow PN X to go on leave, even though this might worsened a staff shortage on the coming Monday. (index facility manager B, interview 2)*

This vignette shows how different types of information and knowledge can be used together within the same decision, rather than at different stages in decision-making. Each “information/knowledge bit”, as shown in Figure 8.3, was not sufficient on its own to make the decision, but needed to be seen together with the others to gain a full understanding of what was at stake if the facility manager cancelled PN X’s leave. Combining information and applying the knowledge also required a call of judgment.



**Figure 8.3 Knowledge working with formal and informal information**

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## 8.7 Influence of the health system context on decision-making and information use

### 8.7.1 Human resource management and governance

The high rate of absenteeism was a chronic problem across the sub-district/substructure. The district-level solution to this problem in 2010 was to devolve the management of HR, including the management of leave of absence (from monitoring leave usage through to formal incapacity or disciplinary hearings) to facility level; however, as described in Chapter 5 - Findings: Understanding the Context, there was insufficient planning to provide training and prepare the systems and processes to support the facility managers. The changing environment and concurrent development of new procedures presented a challenge to facility managers during the period they assumed responsibility for HR processes. Since the devolution of HR functions was new, the line management supervising the facility managers

in both organisations did not have experience in supporting HR functions. In City Health, the facility manager supervisor ran a set of monthly mentoring meetings which gave facility managers an opportunity to share their difficulties and successes and to learn together; facility managers experienced these meetings as being supportive. It gave them the opportunity to develop procedural knowledge on how to manage leave of absence, and how to manage difficult staff members. As the sub-district/substructure's capacity increased, they began to be more actively involved in their oversight role and in providing support, such as in developing the electronic substructure Facility Leave Register and in providing mentorship on identifying potential abusers of leave. In both organisations, a session on HR was added to the induction of new facility managers.

The target-orientated management culture in both organisations was perceived to deflect sub-district/substructure management support in managing leave of absence. Without good formal data, indicators were not possible and formal targets were not set for reducing unplanned leave. Facility managers felt that the sub-district/substructure management was neither attuned nor responsive to the difficulties they experienced in the process of managing people.

The HR information system did not provide the formal information (in the case of MDHS), or give access to the required report (in the case of City Health). This meant that facility managers turned to other sources. In MDHS, the limitations of the Persal database were recognised and research was being done within the province and district in conjunction with an academic partner, to determine appropriate software development and to develop indicators. The substructure was supportive of this and had implemented the electronic Facility Leave Register, thus expanding the formal information available, with an eye to this becoming the part of the formal HRIS for leave.

No database existed on staff training. The use of information in planning the WSP was further constrained by a number of unknowns: the timing of the training was not known, staff left during the course of the year; staff were rotated between facilities, ad hoc courses arose during the course of the year. In one of the index facilities, the facility manager calculated that for 2011/2012, only seven of the planned 21 (33%) courses approved on the WSP for her staff ran, while a further nine ad hoc short courses were attended, which meant that 69% of courses attended (N=16) were not on the WSP.

### **8.7.2 Facility managers' *decision space***

The responsibility for managing all domains of leave of absence was delegated to facility managers and supported by revised policy documents. The lived experience of the facility managers was that their actual area of authority and influence in decision-making varied across the domains. Generally they found that they had full authority to manage the granting of vacation leave taken by their staff, though they were not equipped with formal health information to monitor that sufficient leave was taken throughout the year. They had a wide area of potential influence in managing unplanned leave of staff members: the policy allowed them to exercise their discretion in following processes of counselling, and in the development of supportive, corrective interventions with their staff and managers; this enabled them to devise and implement tailored strategies to manage leave of absence in their facilities. However this area was also limited by the lack of reliable, formal information to identify the staff and departments who potential abused or used excess unplanned leave. Insufficient training, mentorship and supervision further limited this space; while some facility managers acquired experienced-knowledge to make decisions within this space, others struggled. Facility managers had the authority to develop Workplace Skills Plans but this space was undermined by budgetary cuts, district level rationing of courses, staff rotation between clinics, no control over the timing of courses and a plethora of unplanned courses being offered during the year. Also the high turnover of facility staff meant that the need for training remained high, despite facility managers' careful planning of skills development in their facility.

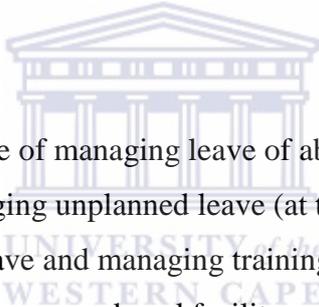
Second-level facility managers in large facilities, some with 100 to 180 staff members, needed to delegate a lot of responsibility for managing leave of absence to their HODs. This introduced a barrier to their control of whether policies were implemented, and whether monitoring and active management of leave of absence was done. This barrier was exacerbated in many stances as HODs were not formally orientated to take on the new responsibilities of managing leave of absence, nor did they received any training.

Importantly, some differences emerged in how facility managers interpreted and acted on their decision-making authority. For example, one index facility manager embraced her role in human resources management, actively taking on the responsibility of managing

individuals with high unplanned leave usage in her facility (the case vignette in Box 8.1 drawn from her practice). Another index facility manager was prepared to manage this problem with a set of facility level strategies (displaying graphs of absenteeism rates outside her office and addressing staff meetings), and a third chose not to engage at all, claiming that it was not much of a problem in her facility, despite some evidence to the contrary.

In the workshop series, members of their peer groups likewise showed varying degrees of engagement with managing absenteeism. A novice manager and two experienced managers who were recently appointed to the sub-district were particularly interested in how they could interpret their discretionary power in the counselling processes, and the discussion reportedly opened up their understanding of what was possible and allowed within the sub-district context.

## 8.8 Summary



This chapter has described the case of managing leave of absence and has identified three focal areas of management: managing unplanned leave (at the level of the facility and the individual), managing vacation leave and managing training leave. In this case the formal information available in the HRIS was weak and facility managers were creative in establishing their own systems to track leave usage. Informal information emerged as particularly important in people management. *How* the new HR policy was introduced and the poor availability of formal HR information were important contextual influences on how decisions were made and what information was used, and was linked to governance. In this case, the concept of decision space came to the fore in the case report, and was seen to be influenced by the context and, specifically, by what information was available.

The next chapter presents the cross case analysis as a meta-analysis of the three cases.

## Chapter 9. Cross Case Analysis

This chapter presents a meta-analysis of the findings across the three cases as they relate to the objectives of this research, outlined in Chapter 4 - Methods. The scope and nature of the decision-making is analysed as well as how facility managers use formal and informal information in decision-making, which leads a typology of the relationships between formal and informal information. Going beyond the initial objectives, but in keeping with the early finding that experience-based knowledge is also used in decision-making, this chapter describes how such knowledge is generated. Finally the influence of the health system context is analysed.

### 9.1 Decision-making

#### 9.1.1 Scope and nature of decision-making

Across the three cases, the primary healthcare facility managers were primarily concerned with managing the implementation of services, and managing the people delivering them, within the broader service delivery mandates and priorities described earlier. Facility managers faced a constant stream of decisions as they moved around their facilities, and even at their office desk, their work was frequently interrupted by staff and clients requiring a decision. The predominant model of decision-making is that of problem solving. Their key decisions were, for the most part, framed as assessing *whether* intervention was necessary to meet these mandates and, if it was, deciding *how* to intervene, as shown in Table 9.1.

In addition there were decisions to do with scheduling tasks, such as when developing annual leave and training schedules, and contingency plans. Most of the decision-making which emerged during the observations, interviews and workshops was operational: the decisions were routine day-to-day decisions about the running of the facility and the management of staff. However these decisions reflected sub-district/substructure policy such as the newly introduced decentralisation of HR management, the prioritisation of certain programmes reflected in a deferment policy and the increased focus on quality improvement. Very little decision-making at facility level was strategic, in terms of setting new direction and

introducing or expanding services. Attempts to involve facilities in provincial and City Health priority setting processes, in prior years, set unrealistic timelines which undermined the process. Scheduling and proactive planning activities were built into routines such as monthly facility managers meetings, but were difficult within the context of facility management, as facility managers found that they were often interrupted at their desks, and that they needed to be actively engaged with staff and processes on the facility floor.

Much of the decision-making was reactive in nature, responding in the moment to problems as they arose. In managing efficiency of service delivery, most decisions required on-the-spot problem solving in the face of client demand for services, congestion, delays and complaints. Facility managers intended to be proactive in planning annual vacation leave and training, but even these schedules were subject to last minute change, as more information emerged (timing of training programmes, additional ad hoc courses on offer, and other staff members off sick). Management of service inputs was more proactive, for example, facility managers had weekly and monthly routines for ordering pharmaceutical stock and supplies, but a lot of management attention and energy was still directed towards dealing with orders for supplies that were not met as expected, and equipment that was faulty. Some proactive planning for programmes happened in PDR reviews in sub-district/substructure meetings, but still the management of the implementation process required observations and interactions on the service delivery floor, and again tended to be more reactive in nature.

This research shows that facility managers made decisions across different time frames. Much of the decision-making was immediate (reactive problem solving), and a fair amount was built into monthly routines (such as the review of programme performance and small clinical governance audits) which was more proactive in nature. There were relatively few scheduling and planning activities with an annual cycle, and these were again more proactive in nature.

**Table 9.1. Key decisions in each case**

<b>Case</b>	<b>Key decisions</b>
<b>Efficiency of Service Delivery</b>	<i>Is the anticipated workload too much for the staff on duty today?</i>
	<i>Should the deferment policy be implemented now?</i>
	<i>How should the deferment policy be implemented?</i>
	<i>Is intake and flow efficient?</i>
	<i>How can client intake and flow be improved?</i>
	<i>Are certain staff members not productive enough?</i>
	<i>How can workload productivity be improved?</i>
<b>Programmes</b>	<i>How can work best be allocated to maximise efficiency and quality?</i>
	<i>Is programme coverage adequate or improving?</i>
	<i>Is programme quality adequate or improving?</i>
	<i>Is the routine data complete and of good quality?</i>
	<i>How can programme coverage be improved?</i>
	<i>How can programme quality be improved?</i>
<b>Leave (unplanned)</b>	<i>How can the routine data be corrected?</i>
	<i>Should permission for unplanned leave be granted?</i>
	<i>Should a particular request for leave be categorised as paid or unpaid?</i>
	<i>Does individual leave usage suggest excessive use or abuse?</i>
	<i>How can individual staff members be effectively managed to reduce unplanned leave</i>
	<i>Is there excessive use of unplanned leave at facility or department level?</i>
<b>Leave (planned)</b>	<i>How can the collective staff be managed to reduce unplanned leave?</i>
	<i>How can leave scheduling be done fairly?</i>
	<i>Should leave be recommended (City) or authorised (MDHS)?</i>
	<i>How can contingency plans (MDHS only) best be developed</i>
	<i>How can a staff training plan best be developed</i>
	<i>Should staff be released to attend unplanned training?</i>

Importantly, some differences emerged in how individual facility managers interpreted and acted on their decision-making authority. This was most noticeable in the case study on managing unplanned leave. For example, one index facility manager embraced her role in human resources management, actively taking on the responsibility of managing individuals with high unplanned leave usage in her facility; the case vignette in Box 8.1 is drawn from her practice. Another index facility manager was prepared to manage this problem with a set of facility level strategies such as displaying graphs of absenteeism rates outside her office, and addressing staff meetings, and a third chose not to engage at all, claiming that it was not much of a problem in her facility, despite some evidence to the contrary. In the workshop series, members of the facility managers' peer groups likewise showed varying degrees of

engagement with managing absenteeism. A novice manager and two experienced managers who were recently appointed were particularly interested in how they could interpret their discretionary power in the counselling processes, and the discussion opened up their understanding of what was possible and allowed within the sub-district/substructure context. However, the unit of analysis in this research is the case, not the facility manager, which means that some of these differences are lost in the cross case meta-analysis presented here. That individual differences exist does however remain important, as this has implications for the managerial and supervisory support that is needed at this level.

### **9.1.2 Complexity in decision-making**

The key decisions in the areas of management ranged from simple, to complicated, to complex<sup>46</sup>, when viewed as isolated decisions. For example, deciding on the intake of clients for the day in facilities with an appointment system was a simple calculation based on the number of staff on duty, number of clients booked and workload norms. Managing and coordinating programme inputs was more complicated, requiring attention to multiple factors such as staffing levels, training, drugs, consumables, equipment and information. Many of the decisions could be considered complex, requiring more than technical approaches, particularly those that involved managing people, such as when deciding how to provide supportive corrective intervention to improve productivity or reduce absenteeism. Some processes of decision-making, such as the participatory processes used to decide on an efficient allocation of work when short-staffed, or the fair allocation of annual leave, were complex processes in that they drew on what people knew and what people judged to be best or fair or acceptable.

The use of information used across different types of decisions (simple, complicated and complex) did not show any patterns that suggested that the types of decisions were important to understanding how information was being used, and how this use was being influenced by the health system context. It may be that the research approach was not suitable to investigate this and that further research is required to understand this. However what did emerge from

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<sup>46</sup> This applies the categorisation of simple, complicated and complex problems, as developed by Glouberman and Zimmerman (2002, in Marchal et al., 2014) and described in section 3.5.7, to the nature of decision-making.

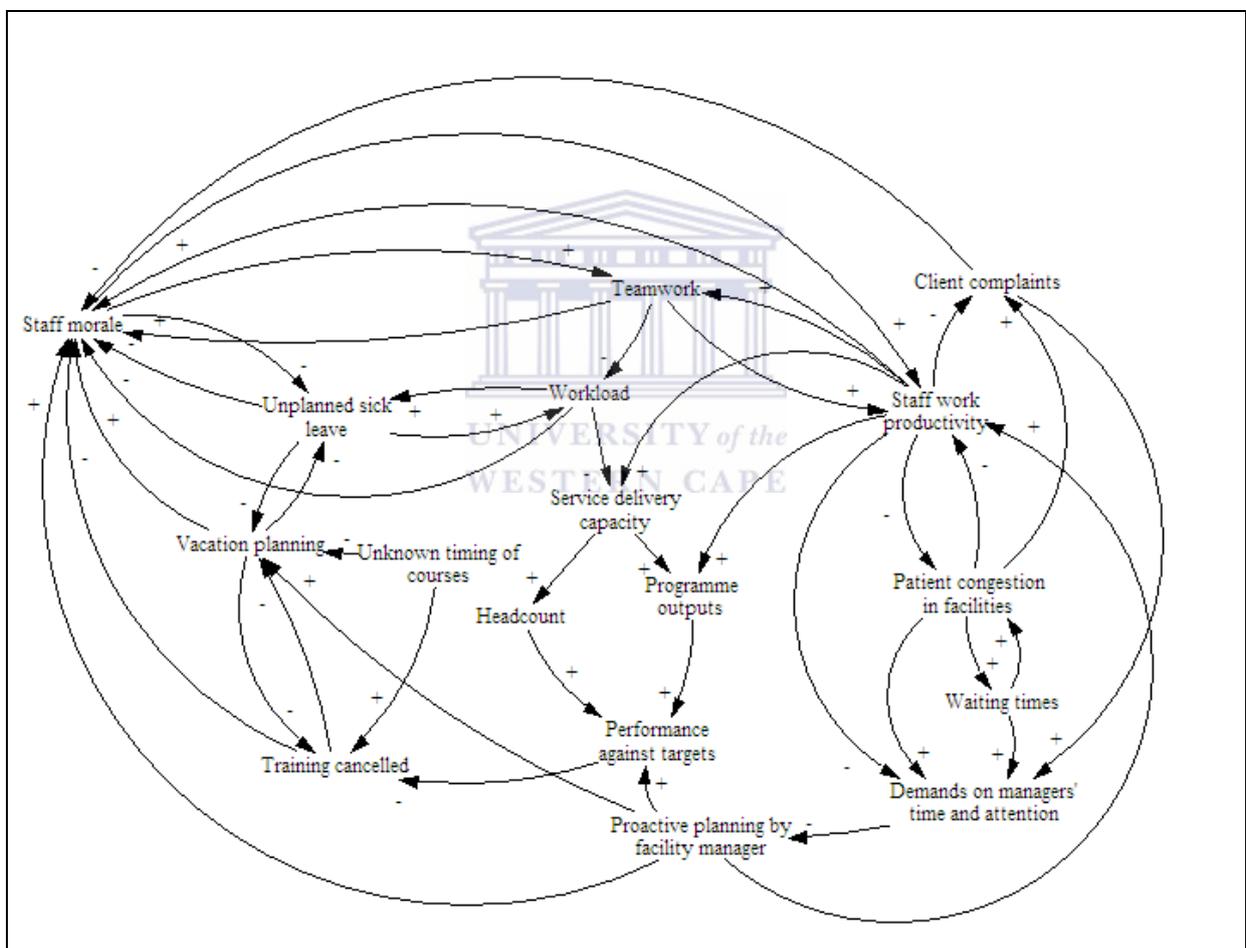
the data was evidence that operational management is a lot more complex than anticipated as the decisions in this research were not isolated decisions. The analysis confirmed the extent to which the management decisions in the three cases were inter-related and nested within each other. This was often through multiple, overlapping operational objectives: facility managers sought to improve client intake and flow, with a view to improving efficiency of service delivery, but also programme coverage; as they managed planned and unplanned leave to reduce absenteeism, they also wanted to increase the number of staff on duty to increase the client intake and programme coverage. The unpredictability of juggling multiple demands (not knowing which decision would present itself when, and how much attention it would require) added to the complexity.

The management of staff morale emerged as a cross-cutting management concern in all three cases. It was seen to be a consequence of staff working under stressful conditions: being short-staffed (sometimes as the result of poorly coordinated training and annual leave) was compounded by unpredictable and often high client intake or congestion. Low staff morale was understood to result in high rates of absenteeism and to threaten responsiveness to clients.

The complexity of decision-making is illustrated in Figure 9.1. which portrays a web of interlinked variables over which the facility manager tried to exert some control in managing the areas represented by the three cases. Unplanned sick leave increased with increased workload, low staff morale and poor planning of vacation, the unknown timing of training courses and excessive use of sick leave. This reduced the capacity to deliver services which meant that headcount and programme outputs decreased, and congestion and waiting times increased. Congestion and long waiting times were a deterrent to clients attending for preventative services, and so independently reduced programme outputs. They also resulted in more client complaints which reduced staff morale, and took up the facility manager's time and attention as she sought to resolve the cause of the complaints.

The facility manager found that she was having to spend her time *putting out fires* and did not have sufficient time for proactive planning. This meant that scheduling activities such as vacation planning were neglected, and there was not sufficient attention given to planning to improve service coverage and quality. This meant that the facility performed poorly against the targets set, which lowered staff morale. Unplanned leave was also understood to increase

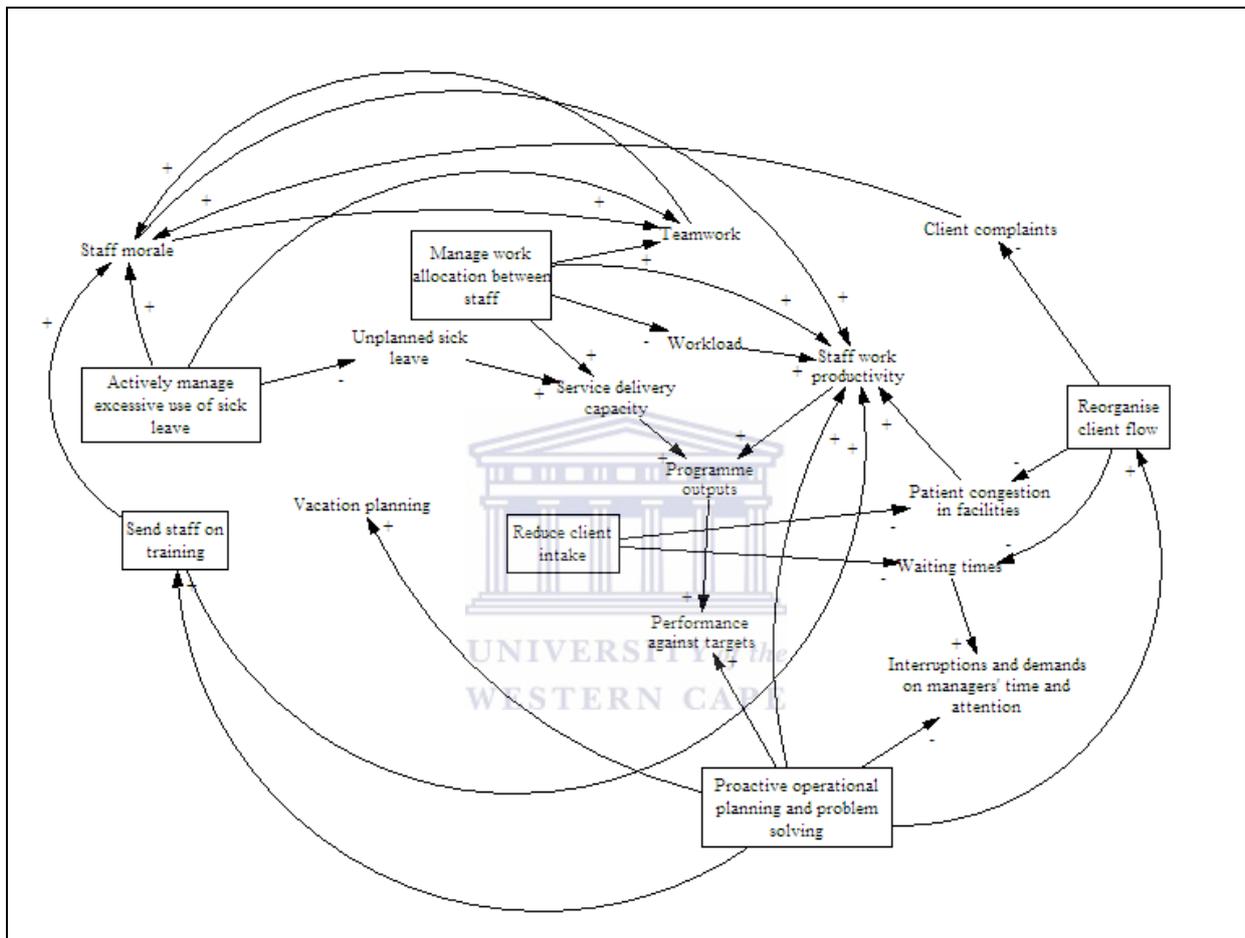
the workload for the remaining staff on duty. Further staff resented their colleagues abusing sick leave and *leaving them in the lurch*, which reduced staff morale. In some cases, scheduled vacation leave had to be cancelled to ensure that services were delivered, which further reduced staff morale. Unplanned leave stressed peer relationships, impacting on teamwork which reduced morale further; the resultant unhappiness and conflict required the manager's attention. Low morale also resulted in more client complaints where staff responsiveness to clients deteriorated; it also impacted negatively on staff productivity, which further reduced the capacity for service delivery, which ultimately impacted negatively on the facilities' performance against set targets.



**Figure 9.1. How variables interconnected in the context of decision-making in primary healthcare facilities<sup>47</sup>**

<sup>47</sup> This diagram is not intended to be a formal causal loop diagram and so does not show the feedback loops.

The complexity of decision-making can also be understood when exploring how a facility manager's actions might ameliorate the same set of variables. This is illustrated in Figure 9.2. In this figure, actions have been inserted and new connecting lines show which variables each action is intended to improve, and how these impact on other variables. In the description in the text that follows, the variables are presented in italics to aid identification.



**Figure 9.2. How a set of actions might work on multiple variables in primary healthcare facilities**

Legend: Rectangular labels - actions taken by the facility manager

The intention in actively managing excessive use of sick leave was to reduce *unplanned sick leave*, to improve *staff morale* and strengthen *teamwork*. Managing work allocation between staff members (an action which is often in response to a staff shortage) was to: preserve the priority service delivery and so improve *programme outputs*, to ensure fairness, improve *staff morale* and strengthen *teamwork*; and to maximise the combination of skills of staff on duty to improve *staff productivity*. Facility managers sought to send staff on training to improve

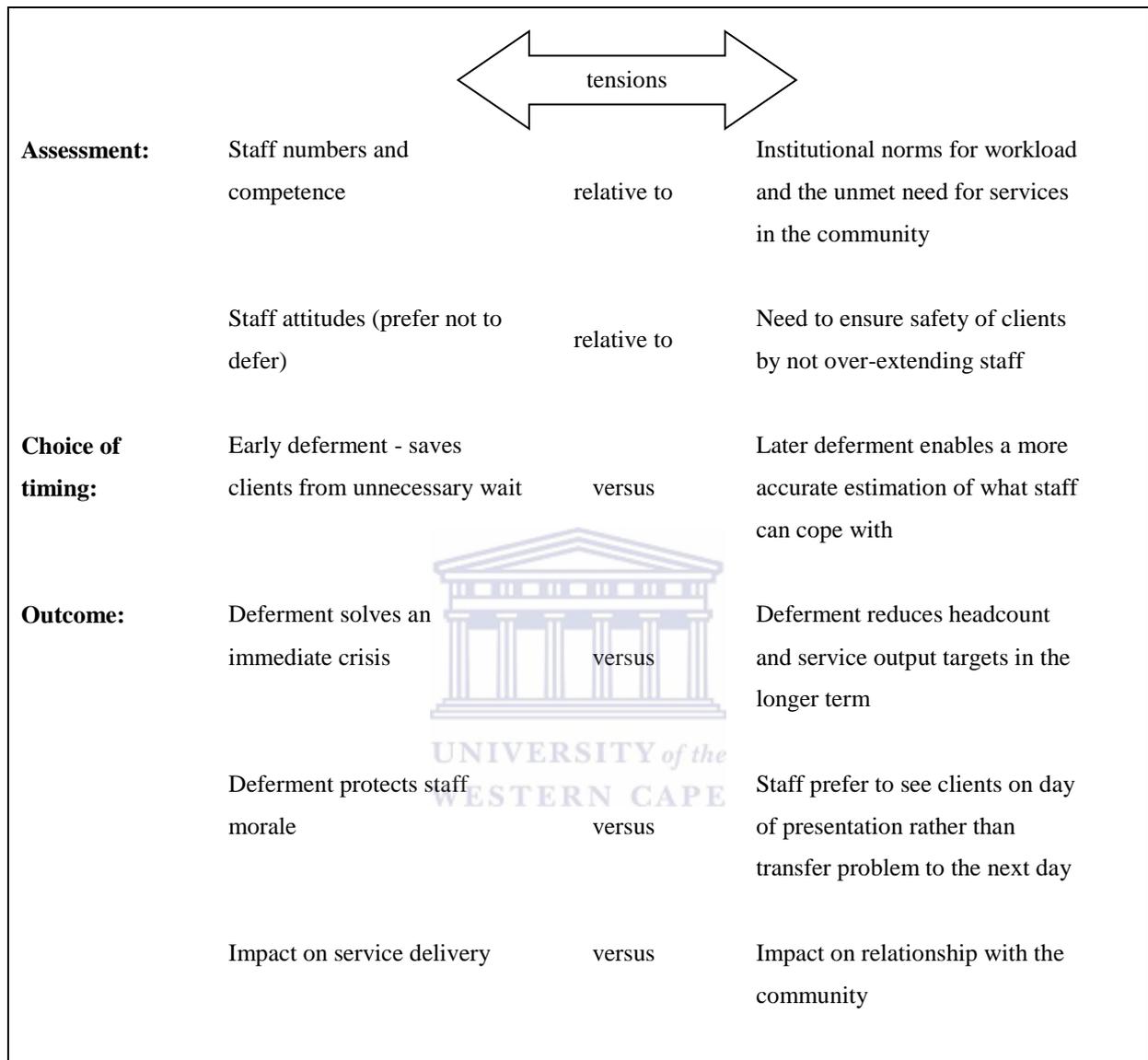
*staff morale* and to improve staff skills to improve *staff productivity*. Furthermore they sought to reorganise the flow of clients through the facility to reduce *congestion*, *waiting times* and thereby have fewer *client complaints*. Likewise they reduced client intake for the same reasons, thereby ensuring that staff could cope with the client workload for the day, and so improved *staff morale*. They recognised the need for more active planning and problem solving: this was to improve *client flow* and *staff productivity*, ensure staff received the *training* they required, improve *staff morale* (both directly by actively building *staff morale* and indirectly by involving staff to build ownership of projects and generate a sense of belonging); and to plan service delivery so as to improve *performance against targets*.

The decisions and variables were not only interlinked, but also sometimes in tension, requiring a balancing or a *trade-off* between objectives. This meant that the facility manager had to exercise judgement and this increased the complexity of decision-making. As an example, the tensions in managing client intake and deferment are shown in Figure 9.3. On days when facilities were short staffed, or when client demand was unusually high, the facility managers had to decide whether (and when) to defer clients. This decision raised a number of questions: Would staff be able to cope with the workload if all the clients presenting to the facility were admitted? What was the client need for service? How urgent was the need? What were the lost opportunity costs - especially for preventative services? What would the longer term impact of deferment be on the relationship between the facility and the community? Was the immediate crisis severe enough to jeopardise the facility's headcount and programme performance?

While deferment was a strategy to protect staff morale, staff in some facilities preferred to see the clients immediately rather than shift the problem to the next day, if they could cope. In addressing *when* this should be assessed, the tension is apparent: it was better for clients to be deferred earlier, so that they did not wait unnecessarily, but better for staff to defer later. The complexity further increased by different time-horizons operating across decisions: the immediate crisis requires an immediate response (managing staff morale) which took precedence over the medium term (impact on service delivery) and long term considerations (impact on relationship with the community).

A key tension in the research setting was between managing service delivery outputs and managing people, particularly staff morale. Both drew heavily on the facility manager's time,

and staff morale was often seen to be fragile, and threatened by attempts to improve productivity and service delivery.



**Figure 9.3. Tensions in decision-making in managing client intake and deferment**

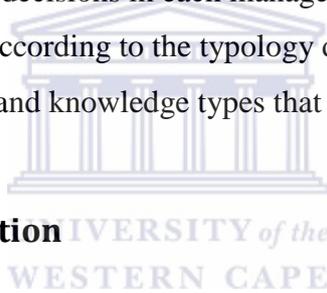
Both interconnections and tensions represent feedback loops within the web of variables. The tensions can be understood as *switches*, which determined the direction of influence, either positive or negative (in terms of reaching the desired outcome of improved service delivery) depending on whether the facility managers' judgement was attuned to the particular circumstances in that instance of decision-making.

## 9.2 Use of information in decision-making

Facility managers in this multiple case study were found to use a wide range of information, some of which met the categorisation criteria for *formal information*, as it was produced through a formal managerial process or practice (such as the HIS, audits, minutes of meetings and counselling notes). A lot of information did not fit this definition and so was categorised as *informal*. Two forms of informal information emerged as important for facility management: rich local information which was particular to the context; and an applied form of information drawn from management experience and better called *knowledge*. Importantly, facility managers used information on a constant basis in decision-making, despite the concern from their sub-district/substructure and district managers, that there was not a sufficient *culture of information use*.

The use of information in the key decisions in each management case is unpacked, giving examples and categorising them according to the typology developed in the course of this research, to describe information and knowledge types that emerged.

### 9.2.1 Use of formal information



A variety of information sources emerged that were regarded as formal, in terms of the definition set out in Chapter 4 – Methods, section 4.6: “information that is formalised by a legitimised managerial process or practice which formalises and institutionalises its use”. A number of formally-accepted routines and practices provided opportunities for information to be formalised, in addition to the RHIS. These are shown in Table 9.2.

There was evidence that formal information, where available, was valued, and that it was used across all three cases. While a lot of the formal information was quantitative, some was qualitative such as the notes made on counselling sessions and minutes of meetings. The use of formal information was particularly strong in the management of programmes, which was entrenched in the sub-district/substructure PDR and performance management systems, and was supported by a well-resourced and developed RHIS. This information had been through several thorough processes of refinement and standardisation to create a minimum data-set for high-quality indicators for managing programme processes and coverage. Facility

managers used formal information generated by various audits to manage programme quality. Some audits were highly standardised and rigorously conducted, such as the annual HAST audit; others were less structured, such as the sets of clinical governance audits. There was less formal information available for the continuous management of the efficiency of service delivery; (only head count data from the RHIS was routinely available and considered reliable). Instead the formal information that facility managers used came from periodic surveys such as the waiting time surveys and client satisfaction surveys; they also drew on information in the formal complaint system, and client folders including recorded times that the client presented at each service point. The HRIS provided little useful information in a useful format for managing leave. Here facility managers worked more with HR documentation such as staff leave profile forms, staff leave application forms, and documented back-to-work interviews to identify staff who potentially abused sick leave. In managing difficult staff members, facility managers generated information in back-to-work interviews and counselling processes. During the period of this research, the need for good filing systems to organise and store HR information at facility-level became apparent; this system was evolving so that facility managers would have on-site access to securely-stored information on leave management and counselling processes.

Facility managers also did not have all the formal information they required to plan training. While they knew the service priorities, their facilities' training needs to cover these priorities and the procedures to follow in applying for training for their staff, they did not know about and anticipate budgetary cuts, the outcome of staff rotation between clinics and the timing of courses. This introduced an element of uncertainty into the planning process. Staff training audits were cumbersome to maintain and update in large facilities, and there was no formal database of individual staff members' training.

**Table 9.2. Sources of formal information across the three cases**

	<b>Managing efficiency</b>	<b>Managing programmes</b>	<b>Managing unplanned and planned leave</b>
<b>Official routine health information system (RHIS)</b>	<ul style="list-style-type: none"> <li>• Electronic HIS data base generating monthly RMR reports</li> </ul>	<ul style="list-style-type: none"> <li>• Programme registers captured into HIS data base generating monthly programme report</li> <li>• RMR reports (for immunisation and STI)</li> <li>• Campaign registers.</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic HR database - data supplied on demand</li> </ul>
<b>Parallel routine information</b>	<ul style="list-style-type: none"> <li>• Time seen at each service point noted in client folders</li> </ul>	<ul style="list-style-type: none"> <li>• Service point registers of services provided and name of attending clinician</li> <li>• Other registers designed at facility-level to monitor for local use</li> </ul>	<ul style="list-style-type: none"> <li>• Staff leave profile</li> <li>• Duty roster</li> <li>• Annual vacation schedule</li> <li>• Workplace skills plan (marked up with what training has or has not happened)</li> </ul>
<b>Audits and surveys</b>	<ul style="list-style-type: none"> <li>• Waiting time survey</li> <li>• Client satisfaction survey</li> </ul>	<ul style="list-style-type: none"> <li>• Annual standardised HAST and other programme audits</li> <li>• Monthly clinical governance audits;</li> <li>• Folder review as part of morbidity and mortality review</li> <li>• Supervisors quarterly management tool/PHC supervisors guide</li> </ul>	<ul style="list-style-type: none"> <li>• Work place skills audit</li> </ul>
<b>HR processes</b>	<ul style="list-style-type: none"> <li>• Documentation of counselling processes (related to low productivity)</li> </ul>		<ul style="list-style-type: none"> <li>• Leave application forms</li> <li>• Back-to-work interview;</li> <li>• Documentation of counselling processes (related to unplanned leave)</li> <li>• Workplace skills plan</li> </ul>
<b>Other cross cutting processes</b>	<ul style="list-style-type: none"> <li>• Formal complaint system</li> <li>• Meetings: sub-district/substructure and facility management meetings, monthly and weekly HOD meetings, monthly staff meeting</li> <li>• Policy documents</li> </ul>		

## 9.2.2 Use of informal information

The nature of decision-making in small facilities (which was mirrored in departments in the larger facilities) required information that was particular to the individual staff members, teams, services and circumstances, which was attuned to local context and which offered explanation. Formal information did not provide this type of information; facility managers drew instead on information gathered during their routine management practices which involved meetings and daily interactions with staff, HODs and clients, and which gave the opportunity for conversations and observations. Even when managing programmes with their well-developed RHIS, the use of informal information emerged as very important, for example: how staff felt about a new initiative (e.g. the introduction of cervical smear programme in MDHS); how active champions and HODs were in managing their responsibilities; and how programmes were being implemented by staff.

Participatory decision-making processes had the ability to elicit relevant, often informal information, such as asking the PNs how they would allocate work amongst themselves, and involving staff in allocating vacation leave in a fair way. Some of the informal information was *applied*, related to understandings of procedures or based on experience and learning, and is better described as *knowledge*. It is however that which *informed* the facility managers' decisions and is thus relevant to understanding what information was being used. A typology developed by Zack (1999) was found to be useful in describing the different types of knowledge which facility managers generated and used in decision-making. *Know-about* described the factual knowledge that facility managers had, and appeared to fit with the type of knowledge that was local, akin to information, and also that knowledge which was factual and could also be called *factual knowledge*, for example, knowledge of the human resource policy. *Know-how* described their practical, applied knowledge of how to manage, how to interpret and apply policy, how to work with staff members, how to negotiate relationships within the local health system context. *Know-why* described their knowledge of causes, underlying problems, and their knowledge of what consequences were likely to follow an intervention. *Know-when*, as applied in this

research, described very detailed knowledge of what effect could be expected *in which circumstances*. As such it was more specific than *know-why*.

Extensive informal information and knowledge was used by both first and second-level managers across all three cases. For example, in managing efficiency of service delivery, both levels of managers valued making rounds of their facilities for observation, and found these to be a rich source of informal information in managing client intake and flow.

### **9.2.3 Comparing information used by first- and second-level managers**

The information needs varied somewhat between first and second-level managers. For example, in organising annual vacation plans, first-level managers needed detailed information about staff leave requests, previous leave history and personal circumstances. In contrast, second-level managers needed to know if their HODs had successfully been able to draw all this information together in a process that their staff deemed fair. The key measure of this was whether they had submitted their plans to her office assistant. HOD meetings were used to monitor progress in their submission, and to gather information on what difficulties the HODs were experiencing if the plan was not yet submitted. Similarly in managing programmes, first-level managers needed to know the detailed operational reality of how a programme was being delivered and staffed, to develop an effective action plan to improve coverage or quality, whereas the information required by the second-level managers was whether their HOD was taking on the responsibility, and whether she was competent in gathering together the required information and developing the plan. In managing efficiency of service delivery, both first- and second-level managers valued doing a round of their facility to observe for themselves issues of client flow. First-level managers required detailed knowledge of staff members individual competence, speed of work relative to their peers, ability to deal with pressure and to work independently in allocating work, when very short-staffed.

Second-level managers needed to know more about how HODs were managing a situation of delays and congestion on the service delivery floor, and how this could be prevented in the future. Many second-level managers found themselves actively involved in managing these situations because they were a high sub-district level priority, and because some HODs had not taken on the responsibility sufficiently, or were not skilled enough to manage these situations. In looking across the focal areas of decision-making in the three cases, the information needs of the second-level managers were often very similar to those of the first-level managers, in situations where HODs were seen as not taking on their responsibilities.

Generally first and second-level managers had access to the same formal information in decision-making: RHIS, audits, documented meetings and counselling. At times the second-level managers worked with more aggregated data, such as the head count across the entire facility, rather than the headcount in one department. Access to the information *did* vary significantly between first and second-level managers, in the realm of informal information, so crucial across all three cases. First-level managers often had more access to observational data and to the types of interactions required to generate the rich, particular information required for managing people for *all* their staff. In larger facilities the second-level managers required their HODs to report the relevant aspects of this to them when the need arose. The system of management was potentially fraught with miscommunications (e.g. the clinical manager in the index MDHS facility not informing the facility manager that the time-to-appointment was unacceptably long).

A significant theme that emerged in relation to second-level managers' information needs was the extent to which they could trust their HODs in terms of being competent, and taking on the responsibilities delegated to them. Further, building a good relationship with one's HODs - characterised by accountability and trust - was seen as being crucial to ensuring a good flow of reliable information from the service delivery floor, on pertinent issues of staffing and service delivery. Second-level facility managers' decisions on whether to intervene were tightly bound up with what they knew about their HODs' technical and social competence in managing service delivery, such as: their ability to problem solve; the extent to which they assumed responsibility for delegated functions and their past history in this regard; and finally

whether they would reliably report key problems about which the facility manager should be informed.

### 9.3 How knowledge is generated

In all three cases, experience was seen to generate valuable knowledge. For example it was experience which informed an index facility manager's vigilance in seeking out urgently ill children in the queue for child curative services on a Monday morning (Chapter 6 - Findings: Managing Efficiency of Service Delivery). From experience she had gained causal knowledge: people in her community were reticent about calling an ambulance or taking a child to the referral 24 hour emergency unit over weekends, which meant that on Mondays there were often very ill children in the queue.

In another instance, it was from experience that facility managers knew how to validate and correct the errors in the RMR data (Chapter 7 - Findings: Managing Programme Priorities) and from experience that facility managers knew they had more discretion on sending staff to ad hoc training than to training on the WSP. This knowledge is predominantly *know-about* and *know-how*.

From this research, procedural knowledge was not only acquired by personal experience, but seemed to also be acquired from others in collectively discussing experiences. For example, in the peer workshops held on each case, facility managers shared their ongoing challenges, as well as their strategies and approaches to each area of management responsibility. They repeatedly reported that, in these workshops, they learnt a lot about how to apply policy and how to manage difficult staff members (Chapter 8 - Findings: Managing Leave of Absence)), and how to organise services (Chapters 6 and 7). The discussion of experiences was found to be particularly productive when the problem was novel (which applied to most aspects of managing absenteeism) or recursive (e.g. addressing the problem of long waiting times and congestion). In these instances, newly-appointed facility managers found the learning to be very rich.

New initiatives which required experimentation and evolving plans (such as the immunisation campaign and the reproductive health project in Chapter 7 - Findings: Managing Programme Priorities) and which consciously provided a meeting space to monitor progress and share experiences, were rich learning opportunities, generating practical knowledge regarding logistics (procedural knowledge). In both these examples, a willingness to look beyond success and failure also allowed for deeper reflection, which produced knowledge on *what works*, *why* and *when* (causal and conditional knowledge respectively). There were also opportunities for experimentation within the routines of management practice. For example, managing staff allocation to optimise service delivery when short-staffed, required experimentation: on different occasions, varying numbers of different cadres of staff were absent, and under different conditions, such as different days of the week, or times of the year, which impacted on patterns of service demand; this required facility managers to combine service points and allocate staff in different ways. In some facilities the staff resisted moving between service points (or co-operating in other innovations proposed by the facility manager), which reduced the opportunities to learn. Where facility managers *did* experiment, potent feedback on the success of each attempt was provided by observation of how staff coped, and whether clients were satisfied. There was, however, no dedicated forum for sharing experiences and reflection on such experimentation in routine practices, although the immediate feedback loop seemed to support learning.

Experience did not always generate positive learning opportunities. Of the two new managers who were among the first to conduct formal counselling and disciplinary hearings with staff who used leave excessively, one acquired new knowledge and became the peer resource person, while the other found the experience to be negative and felt that she would have benefited from more support and mentorship.

## **9.4 Patterns of formal and informal information interaction**

Across all three cases, formal and informal information were found to be used together in decision-making. The cases each gave different insights into how this was done. These insights are not necessarily peculiar to the case but are possibly more

easily observed within the decision-making instances of particular management routines within cases. Seven patterns of formal and informal information interacting in management processes emerged, and are described in the next section. The underlying nature of these relationship types is then explored and they are grouped into four distinct relationship types, shown in Box 9.1.

#### **9.4.1 Interchangeable use of formal and informal information in problem solving**

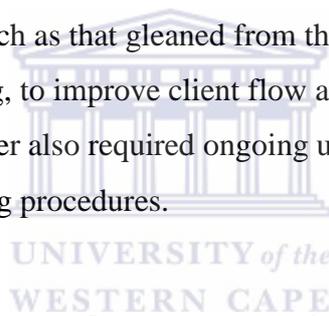
In all three cases there are examples of how formal and informal information were used interchangeably in the management cycle. In managing programmes, formal information served mainly to identify problems and monitor progress. For example, on review of the HCT register, a facility manager noted that very few children were tested for HIV in her clinic, which led her to discover that the IMCI protocol was not being followed. However identification of problems was not the exclusive terrain of formal information. There were also examples where informal information was used to identify problems: for example, a passing observation of a staff member's clinical practice when a manager did her morning round, suggested that the quality of care was not adequate. Many similar examples of informal information being used to identify problems were found in the other two cases: for example, problems in client flow through facilities were identified by observing congestion and delays at certain service points (Chapter 6 - Findings: Managing Efficiency of Service Delivery); and a potential leave abuser was identified when a second-level facility manager felt that she was signing too many Z1 leave sick leave applications forms (Chapter 8 - Findings: Managing Leave of Absence).

Problem solving and strategising in all three cases often involved informal information about underlying contributing factors. For example, observations of staff at work helped explain why congestion developed at a particular service point; informal conversations with young people helped pinpoint why they did not feel comfortable accessing facility-based reproductive health services; counselling revealed why a staff member was off sick so often. While less prominent, there were instances when formal information was used in problem solving and strategising, such

as when outreach statistics identified sites that yielded good access to clients in the community.

#### **9.4.2 Informal now, formal later: differential use across time horizons**

The differential use of formal and informal information across times horizons was particularly evident in managing efficiency of service delivery. This is possibly related to the different management modes engaged by facility managers in relation to differently timed processes: crisis management could be seen to favour information that is immediately available and current, while planning was better able to draw on formal information. Facility managers tended to use informal information to make immediate decisions to resolve problems in client intake and flow, and to maximise the efficiency of staff allocation. Formal information, which was only available monthly (RMR) or ad hoc (such as that gleaned from the WTS) was used more in medium to long term planning, to improve client flow and in managing work productivity, although the latter also required ongoing use of informal information in terms of corrective counselling procedures.



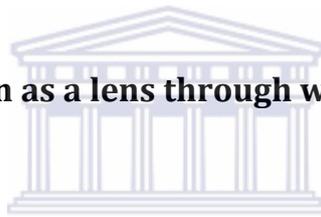
#### **9.4.3 Formal information used to correct informal information**

Instances were observed where formal information was used to challenge, interpret and modify the interpretation of informal information. For example, staff perceived their workload to be high, but this perception was challenged by the formal data on workload, collected routinely in the RHIS. This led facility managers to consider what factors might be causing the perception, such as stress, burnout and high intensity periods of work during the day. This same relationship between formal and informal information is also seen in managing leave, where the perception that absenteeism was not a major problem in some facilities was challenged by the formal data. Facility managers found that their perceptions tended to only identify the worst offenders; the culture of taking sick leave as an entitlement whether sick or not, meant that there was a high normative level of absenteeism which facility managers did not always recognise, but which formal information could show.

#### **9.4.4 Informal information used to make sense of formal information**

Another way formal and informal information were used together, which emerged in the management of programmes, was where informal information was used to correct or to make sense of formal data. This was exemplified in the information use cycle (refer to Chapter 7 – Findings: Managing Programme Priorities, section 7.6.2 for more detail). The cycle was used to ensure that the formal information was appropriate, of sufficiently good quality and that it was used for decision-making. In this research, the logic of the information use cycle was widely accepted in the management of programmes, with its strong tradition of using formal information to identify problems and monitor progress in programme strengthening. Informal information was however found to be essential in making sense of the formal information at three of the key stages: validation, interpretation and acting on formal data.

#### **9.4.5 Formal information as a lens through which experience is evaluated**



The use of formal information as a lens through which the success of new or existing strategies was evaluated and subsequent learning by experience was developed, was most evident in the area of programme management, as illustrated in the immunisation campaign and reproductive health project vignettes (see Box 7.1 and 7.2 respectively). This use of formal information to assess the success of interventions also emerged in the management of unplanned leave. While formal information in the HRIS was not considered reliable, facility managers used an alternative source of formal information, the staff leave profile, to assess whether their interventions in managing particular staff members were successful in reducing leave usage. This pattern of interaction is less evident in managing efficiency of service delivery, perhaps because formal information only becomes available after a long lag period, which means that informal information (such as whether visible congestion was avoided, how staff coped and whether clients complained) was preferred as it gave immediate feedback on the success of interventions.

#### **9.4.6 Formalisation of informal information**

There were processes whereby informal information was formalised in the routines and practice of health management. For example, local information on staff attitudes in a particular facility was formalised when it was raised and discussed in HOD meetings. Similarly information emerging from informal counselling sessions with staff to address frequent low work productivity (see Chapter 6 - Findings: Managing Efficiency of Service Delivery), or inadequate quality of service provision (Chapter 7 - Findings: Managing Programme Priorities), or unplanned leave (Chapter 8 - Findings: Managing Leave of Absence), became formalised when documented in the communication books. Learning which emerged in collective reflection on how to improve the reproductive programme became formalised when it was presented as *lessons learnt* in sub-district/substructure management meetings.

#### **9.4.7 Formal information becoming informal**

There were processes whereby formal information was internalised and became part of the subconscious or tacit knowledge base on which facility managers drew. For example, with experience, the leave policy (a form of formal information) was applied and interpreted in different circumstances. This generated conditional knowledge which went beyond that which was institutionally documented or formalised in meeting discussions. Some of this could be expressed but, with time it became taken-for-granted *what we generally do in this setting*, and so became tacit.

### **9.5 A typology of relationships between formal and informal information**

The seven patterns of relationships between formal and informal information could be categorised into four distinct types, based on the underlying nature of the relationship. The first three types speak to how formal and informal information are used together, while the last speaks to the nature of information.

### Box 9.1 Patterns of how formal and informal information interact in decision-making

#### Independent relationship

- Formal and informal information used interchangeably in problem solving

#### Sequenced relationship

- Informal information used for immediate management and formal information for longer-term planning

#### Functional interdependence

- Formal information used to correct informal information
- Informal information used to correct or make sense of formal data
- Formal information used as a lens through which strategies are evaluated and subsequent learning by experience is developed

#### Ontological conversion

- Informal information formalised in the routines and practice of health management
- Formal information becoming informal with experience.

In the *independent relationship*, both formal and informal information are used: the main purpose is to inform management decisions. Either can be used at any of the stages of decision-making and both make a valuable contribution. In the *sequenced relationship*, the use of one precedes the other, not in terms of the management cycle, but in terms of a timeline. This sort of relationship is typically seen when an immediate decision is required (most likely in reacting to a problem): at this point facility managers use the information that is immediately available to make the decisions - informal information. Later, as the facility managers moves from the immediate reaction to a more proactive planning approach, formal information can be sourced and used. In the *functional interdependent relationship*, the prime purpose of using both information types is not to inform management decisions: instead the purpose of using the one type is to verify, make sense of or interpret the other.

In the *ontological conversion*, the distinction between formal and informal information begins to blur, as the one is conjoined over time with the other, and they lie along a continuum. Informal information is formalised in the routines and practice of health management; likewise formal information becomes internalised and acts at a subconscious level as tacit knowledge and is no longer recognisable as formal information.

## 9.6 The influence of the health system context

### 9.6.1 Governance

In this research, governance across and within levels of the health system was seen to influence information use via three different routes, by influencing:

- the management processes and practices,
- what information was valued and available,
- the facility managers' decision space,
- values and relationships.

While the governing of values and relationships are important aspects of national and local governance, they are expressed in management processes and practices. As the evidence for how values present and influence decision-making is discussed in section 9.6.2 on management of health services, they are more logically discussed subsequent to this, in section 9.6.3.



#### **The influence of health system priorities on the value given to health information**

National governance, operating through the development and promotion of policy in both the general government arena and more specifically in the Department of Health, influenced the setting of health outcome priorities across levels of the health system, with measurable targets of performance. National commitment to the MDGs meant that the delivery of programmes was prioritised from the national level, through the Western Cape Department of Health to the district level, with a particular emphasis on extending the coverage of HIV, TB, maternal and child health programmes. This shaped management priorities for the primary healthcare facility managers who were managed according to their facilities' performance in reaching programme targets. The need to monitor the MDGs heightened the need for good quality health information (and the value given to it) and led to a substantial investment in the development of health information systems and processes that could manage service delivery information. This supported the dominant role that formal, routine health information played in management practice (as described later).

Another important local priority, which was driven by national policy, is responsiveness to clients and communities. *A policy on quality in health care for South Africa* (Department of Health, 2007) and *National core standards for health establishments in South Africa* ( Department of Health, 2011b) set this priority, which was passed down through managers at the different levels of the health system. It shaped the client-centred approach in the Western Cape Department of Health's vision-setting, *Healthcare 2030 - the road to wellness (draft)* (Western Cape Department of Health, 2013) and the values adopted in the City of Cape Town (City of Cape Town, 2013; 2012) and in MDHS (Klipfontein Mitchells Plain Substructure, 2013).

Another system priority which influenced the valuing of health information was the formal complaint system which was established to monitor the occurrence and resolution of client complaints. On the ground this meant that facility managers gave high priority to avoiding and responding to complaints, and to improving efficiency of service delivery to reduce client waiting times in their facilities. They supplemented the formal information from the complaints system with the informal information they received directly from clients or reports from their staff, and actively managed these to avoid the complaint entering the formal system.

### **The influence of the organisational structure on what information is available**

The MDHS organisation structure divided the management support functions into different departments, each providing a dedicated service within a silo arrangement: finance and supply chain, human resources, pharmacy services and health information. Each department had its own dedicated staffing and used separate systems and procedures. This meant that facility managers dealt with different sets of people through parallel processes using different procedures. The different sub-systems increased the number of relationships in which facility managers needed to engage to do their work, and required a sophisticated negotiation of lines of authority and communication across the organisational organogram. For example, facility managers tasked with managing the HIV programme had to deal with actors in this

programme, finance and supply chain, and the human resource directorates separately. Each directorate had its own separate information system and the lack of technical interoperability between each system meant that the facility manager had to access each separately. In City Health, the smaller sub-district organisational structure meant that there was one administration officer responsible for giving facility managers support in HR, finance and supply chain management. While this reduced the number of relationships, the information systems were still separate. In addition, the HIS was seen as separate from this administration collective, exacerbated by having a separate health information officer in the sub-district office.

Another consequence of separate information subsystems was that the HRIS had not benefitted from the information development that had taken place within the HIS. This meant, for example, that while the facility managers had reliable information on their facilities' immunisation rate, they did not have reliable information on their facilities' absenteeism rate. Data in the HRIS was not accessible, was unreliable and was not automatically converted into information (in the form of indicators); this reduced the amount of formal HR information available to be used in facility level decision-making. The procurement information system was also separate and had not benefitted from the strengthening of the HIS; it was also dysfunctional, making it difficult for facility managers to track orders and hold others to account.

While the HIS was conceived at national level and in the policy documents, as a custodian of the full array of formal information required for managing the health service (including periodic surveys), at district level the emphasis was on managing the minimum data-set which was captured and stored in the RHI database. It was not expected that the health information officers would support, store or assist the retrieval of local facility and sub-district/substructure audits and surveys. This routine data was kept variously by facility managers, sub-district/substructure management, programme staff and physicians charged with clinical governance. It was not always retained from year to year or passed from one incumbent to the next. This affected the availability of this information and its use to track change over time.

## **The influence of governance on management processes**

In this research, governance was seen to influence the development and adoption of management processes. The national policy environment promoted rational planning approaches in, for example, the *Framework for managing programme performance information* (National Treasury, 2007) and *Framework for strategic plans and annual performance plans* (National Treasury, 2010a). These approaches were adopted by the national Department of Health in its *Framework for the development and quarterly monitoring of the annual performance plans (APPs) and the operational plans of the national Department of Health* (Department of Health, 2012a) and by the Western Cape Department of Health in *The district management accountability framework: a guide for district health managers and their district management teams* (Cupido et al., n.d.). Rational planning approaches were seen as essential to improve service delivery and efficiency introducing management processes with strong accountability mechanisms, with the use of targets in planning, monitoring and reporting processes.

## **The influence of governance on facility managers' decision space**

Governance also acted through the facility managers' actual decision space to influence what decisions could be made, and therefore what information was valued and available. Governance determined how facility managers participated in planning processes and the nature and scope of the decisions they made, which were mainly operational. It determined what authority was given to facility managers, as well as the resources available to them to put these decisions into action. In managing the efficiency of service delivery, facility managers had the authority to change the facility processes determining the patterns and rates of client flow, and to manage work allocation and staff productivity. They were, however, constrained in some aspects because there were limitations to what change could be supported by the existing physical infrastructure. Decisions on capital expenditure were beyond their decision-making authority, and negotiating for any major structural changes involved lengthy application and arbitration processes. It was also not possible for facility managers to appoint additional staff members; this meant that while it was possible to align daily work allocation with client flow, it was less possible to change the physical

flow or increase staffing capacity. Facility managers had access on a daily basis to continuous informal information on how efficiently facility processes and the allocation of work among staff was working. The monthly headcount data was available periodically, and was a step removed from the immediacy of daily decisions on whether or when to defer clients. Workload data was considered unreliable, which meant that it was seldom used to negotiate with the sub-district/substructure for additional staff.

The actual decision space of facility managers was further influenced by the nature of relationships within the sub-district/substructure. For example, in managing programmes, MDHS facility managers were given the authority to organise service delivery within their facilities and communities, but this was constrained by the directives issued by substructure programme support staff, themselves responding to imperatives from the district, province and national programme managers and staff, who did not always recognise the authority of facility managers and their task of balancing locally-defined programme priorities. Information from the routine programme registers and from audits was used in mediating this relationship. In managing leave of absence, facility managers had the authority to identify and manage staff who used excessive unplanned leave, and were given discretionary powers in implementing corrective and supportive strategies. However, in this case, facility managers found their effectiveness was undermined by a weak HR information system which did not adequately identify staff who used excessive leave. Their ability to act was further limited by insufficient mentoring and training on the new policy. Early experience was that the sub-district/substructure was not able to offer support in managing difficult staff at the end of the disciplinary process (at the point where the facility managers' authority ended), which undermined the effectiveness of the process, as subsequent dismissal was seldom possible. Furthermore, while facility managers were required to schedule annual vacation leave, staffing requirements changed, and unexpected service needs arose. This information was not available at the time of scheduling annual leave, and meant that schedules had to be revised during the course of the year. Also, in managing training schedules for priority programmes, their decision-space was curtailed by insufficient information on budgets and staff rotation. In City Health, budgetary information lay at the level of the

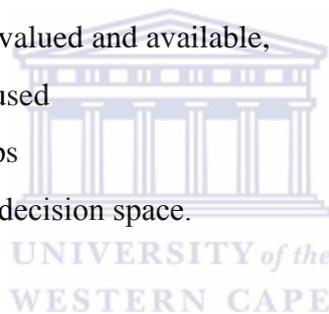
district office, and staff rotation between facilities was done at the discretion of the sub-district managers.

In summary, the facility managers' *actual* decision-space was influenced by the resources to which they had access and their relationships with other decision-makers in the sub-district/substructure office. Information was found to be both an important resource in decision-making, and to play a major role in mediating relationships.

### 9.6.2 Management processes and practices

In this research, management was understood to include management processes, management practices and how the services were organised. These impacted on information use via three different routes, by influencing:

- what information was valued and available,
- how information was used
- values and relationships
- the facility managers' decision space.



#### **The influence of management processes on what information was valued and used, and how**

Strong top-down planning processes set targets and required routine health service delivery information to monitor progress towards these targets. The national and provincial intention was to complement top-down planning with a more bottom-up approach, which was responsive to local need (as is evident for example in Figure 5.1 in Chapter 5 - Results: Understanding the Context). However in this setting, the difficulty in meeting planning deadlines across national, provincial and district levels, and the need to meet the internationally-agreed on MDGs, meant that bottom-up processes were undermined, and the targets were driven from the top-down. Also, it was difficult to include bottom-up priorities identified by participatory processes with community and staff in the formal planning processes, as these priorities were necessarily presented in ways that were parallel to the formal information supporting national and provincial priorities. For example, the community mapping exercise,

undertaken within the broader DIALHS project in 2010, identified illegal refuse dumping and the proliferation of shebeens as local health priorities. While these could be aligned with national priorities (e.g. illegal dumping exposed children to open injuries and even medical waste which could increase HIV risk), it was not possible to align them with the RHIS where the goal was supporting national service delivery priorities.

Facility managers complained that they were not included in the strategic planning processes and that they had little influence over the targets set. Many of these targets were seen as unreasonable in the light of current performance and created antagonism between the sub-district/substructure managers, facility managers and staff. National targets were passed down from one level to the next through the alignment of strategic and annual plans, between levels, and through the performance management system. The facility managers' targets were therefore derived from their operational managers' targets, which were in turn derived from the sub-district/substructure managers' targets, taken from the district managers' targets, taken from the provincial managers' targets and so on. Facility managers felt that what was not measured was not deemed important, for example, deferment; this was an intractable problem in MDHS at the time of this research, and facility managers felt that the substructure management was wilfully blind to it, despite actively managing other aspects of client responsiveness.

### **How service delivery organisation influenced what information was used**

The structuring of service delivery into programme packages with strong sub-district/substructure programmatic support for programme-specific indicators, focused attention on this aspect of RHI; it also distracted from generating information to manage the cross-cutting issues, such as management of staff (both as individuals and collectively in terms of staff morale and teamwork) and relationships with support services (procurement, finance and HR). For example, there was some evidence to suggest that there was less district and sub-district/substructure support, training and mentoring to develop people management skills.

## **The influence of facility-level management practice on what information was being used**

In this research, facility managers were seen to give high priority to validating data in the RHIS. In City Health, a number of parallel data collection practices had been established to validate data in the official RHIS. These practices generated further quantifiable information, whose immediate purpose was data validation, but which supported the use of information from the formal RHIS, in managing facility (programme) service delivery towards targets. Facility managers managed the resources available to them to meet their targets using formal information as the monitoring tool. They spoke to their staff formally in weekly HOD meetings (second-level managers) and monthly staff meetings (both first and second-level managers), and sometimes presented the routine information from the HIS at these meetings. They also addressed their HODs and staff informally on their rounds of facilities; such engagements focused on the importance of meeting targets, and included problem solving proactively or on-the-spot with their staff, to improve programme performance against the targets.

In the case of managing efficiency of service delivery, a different set of practices emerged, supporting the generation and use of information. Facility managers in both organisations and across both first and second-levels of management stressed the importance of being on the facility floor to observe service processes and practices, and to interact directly with staff and clients. This generated rich local informal information and knowledge. The management practice of doing a round of the facility facilitated this. This informal information was used to problem solve when there was localised congestion in the facilities or when clients complained about long waiting times.

In managing leave and in managing programmes, there was a growing openness within the district and sub-district/substructure, to create an environment supportive of learning from experience, and to develop the capability of reflective practice among all levels of managers. In City Health, the sub-district management even experimented with ways of introducing this into the formal management Plan-Do-Review processes. Reflective practice was becoming routine in the programme management fora (as

described in the reproductive health project and the immunisation campaign in Chapter 7 – Findings: Managing Programme Priorities) and was found to be very effective in generating new knowledge to support innovation.

The district and sub-district/substructure concern with re-orientating the values of the health service towards responsiveness to clients and communities legitimated the use of complaints – some lodged in the formal complaint system but some presenting as more informal information in the form of verbal complaints or unhappy or irate clients' demeanour. Facility managers were thereby expanding the types of information they used in decision-making, giving informal observations as much credence as the information that came from the formal complaint system.

### **The influence of management processes on facility managers' decision space**

Management processes determined how facility managers were managed and supervised. As shown in this analysis, more support was given to facility managers to plan rationally to improve programme performance than to manage people and the relationships between people.

Sub-district/substructure supervision processes were built around the programme targets and around a checklist for quality assurance; this caused facility managers to express frustration that they were not being supported on cross-cutting issues, such as the difficulties of managing staff members with high absenteeism. This affected their competency to be able to make the decisions required by their scope of practice.

Because the sub-district/substructure management routines and practices of planning, performance management and supervision were centred on targets, formal information in the RHIS had a high value and the quality of the data was carefully managed and actively used in programme decision-making.

### 9.6.3 Values and relationships

In this research, the values underlying the generation and use of formal and informal information was different, and this required or generated different types of relationships between facility managers and their managers, peers and staff. The use of formal quantifiable information appealed to values of rationality and objectivity, for example, where rational, data-driven approaches to planning and monitoring were being applied. Facility managers characterised the dominant management orientation in both organisations as being target-driven around priority programmes. Accountability between facility managers and their supervisors and managers was built through reporting on measurable progress towards targets. The nature of the accountability mechanism was one of top-down vertical control across levels of the health system, with facility managers being held accountable to the sub-district/substructure managers, who were being held accountable to their district managers etcetera, moving upwards through the system. Upward reporting equated with downward exercise of control.

In contrast, the generation and use of informal information valued that which was local and particular to the local context. This information could not always be quantified, and to do so would have reduced its value. Neither was it objective, but this was not deemed important as the value was instead its local responsiveness which allowed some subjectivity. In many of the decisions, facility managers found that they needed to understand and have rich information on the local context and particular staff and facilities that they managed. This was especially important in managing people, which represented a large part of their work, and in managing facility processes. To gain access to this informal information, the facility managers needed to be accessible and engaged with their HODs, their staff, clients attending the facilities and the communities which they served. They needed to develop relationships with these various actors, characterised by high levels of trust. Further to local information, facility managers needed to learn from experience. In this research, supportive peer and supervisory relationships which nurtured reflection were found to support learning from experience. Peer learning groups were found to increase horizontal accountability between peers, with peers becoming accountable to each other in terms of what they

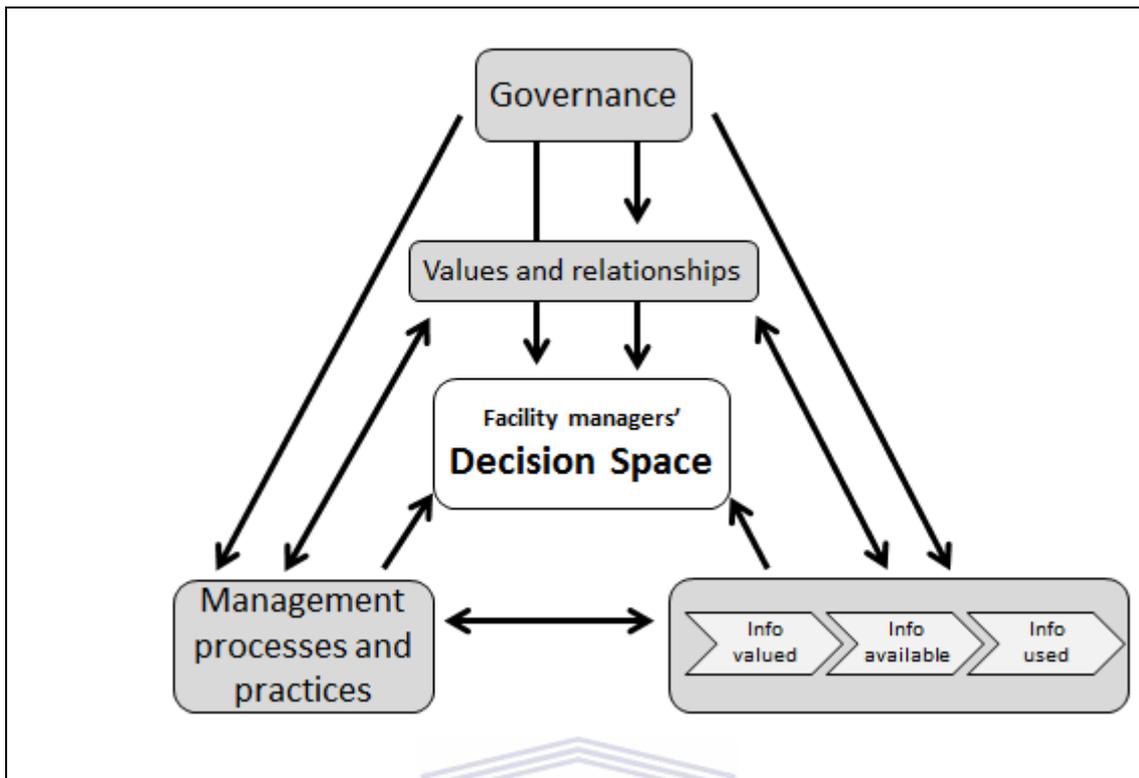
shared about their experience and what they learnt from their experience, and their collective discussion of this experience.

#### **9.6.4 A model of health system influence on information use in decision-making**

The influence of the health system context, which has been described for each individual case across Chapters 7 to 9, has been found to be considerable. Drawing on the empirical evidence across cases, the influence of the health system context suggests a model, shown in Figure 9.4.

##### **Describing the model**

The model shows a dynamic triad with governance at its head. Governance across and within levels of the health system shapes and has influence on management processes and practices, the values held and the nature of relationships as well as the information that is valued and used in decision-making. Its influence has been both direct and mediated (through values and relationships) affecting the scope of facility managers' decision-making. In addition to governance, three other factors (management processes and practices; values and relationships; and information valued and used) had a reciprocal influence on each other, as well as influencing the facility managers' decision space. The facility managers' decision space was thus influenced by all these factors. Importantly it was found to be constrained in a number of significant ways by lack of information which, as has been emphasised, is a resource for decision-making. The information that was valued within the system drew investment and management attention, which further increased its availability and use. This is illustrated in Figure 9.4.



**Figure 9.4. Model of health system influence on information use in decision-making**



### **Applying the model to the empirical findings**

The findings of this research suggest that different modes of governance were being enacted within the study setting and impacted differently on what and how information was used. The dominant mode, which operated across the levels of the health system, was that of top-down control with strong vertical accountability mechanisms. These mechanisms were built into management processes, such as the top-down planning with target setting processes that was handed down the levels of the health system; they were also present in performance management and supervision based on assessing tasks completed and progress towards targets. This mode of governance valued the formal information on service delivery from the RHIS that is useful in these management processes. Other components of the HIS did not have the same development. At a sub-district level, the management processes were translated into practices such as a monthly review of RHIS data in the sub-district/substructure facility managers meeting to track progress towards targets, a one-on-one meeting of the sub-district manager with each facility manager to discuss poor performance in

priority targets, and a checklist-orientated supervisory visit to facilities. The facility managers' decision-space was constrained by the strong programme focus, and the target-orientated approach, which did not take into account broader, cross-cutting issues such as staff management or the problems of working with a dysfunctional procurement system. The lack of good information from other components of the HIS – such as human resources, finance and procurement systems - limited the decision space in these areas of responsibility. For example, while facility managers had been given the authority to manage staff suspected of abusing unplanned leave, they did not have information from the HRIS which identified these staff members.

Alongside this dominant mode of governance in this research setting, there was also a different mode at work, one which encouraged learning for adaptation and innovation. This was seen at sub-district level, in the openness to adopt practices such as the peer review, and collective reflective learning (which was incorporated into the programme task teams set up to implement immunisation campaigns and the reproductive health project). While not fully integrated across management practices, and at times in conflict with the dominant vertical accountability mechanisms (e.g. when time-lines to meet immunisation targets threatened to push facility managers to more doing and less thinking about what they were doing and its effectiveness), the sub-district management demonstrated that they valued local knowledge and knowledge generated from the *experience* of management. This increased the facility managers' decision space as they were encouraged to engage with problems that were locally defined and are not shaped by the programmatic lens. For example, as demonstrated in the reproductive health vignette (Box 7.2), they began to deal with issues such as the relationship between staff and clients, and clients' trust of the health system. Formal information was used as a monitoring tool, but the emphasis was on learning and generating insights to adapt strategies to improve service delivery.

## 9.7 Summary

This chapter has presented a meta-analysis of the findings framed by the objectives of this research. Decision-making was found to be characterised by problem solving and, despite being operational in nature, was at times complex. Facility managers used

both formal and informal information in decision-making, and the patterns of relationships which emerged suggest a typology of four different relationships between formal and informal information. The generation of knowledge has been described, with attention to different types of knowledge. The meta-analysis of the influence of the health system context has shown the importance of governance, management processes and practices, and values and relationships. This has led to the development of a model of health system influence on information use in decision-making, tested against the empirical findings, which includes the concept of decision space.



# Chapter 10. Discussion

## 10.1 Introduction

The key findings of this research concern the nature of decision-making, what and how information is used in decision-making and the influence of the health system context. Importantly, operational management at facility level can be complex; facility managers actively use both formal and informal information in decision-making; in addition formal and informal information are often used complementarily. Further, facility managers must learn from experience in order to adapt and to innovate with interventions within their facilities. Finally, what information is used, and how facility managers use it is influenced by the governance and management processes and practices within the health system context; this requires them to negotiate values and relationships within the health system in using information. This discussion addresses these main findings in relation to other empirical research, and assesses how they fit with, and contribute to established theory in knowledge management, organisational learning, public policy and health system research.

## 10.2 Nature of decision-making

Daily operational decision-making in this research was mainly characterised by on-the-spot problem solving and people management: this required facility managers to respond to issues as they arose in the course of the day. The predominant model of decision-making is that of *problem solving*, as described by Gorry and Scott Morton (1989). Planning and scheduling activities *did* occur, in keeping with notions of rational planning at district level, promoted by national and provincial policy documents, but these were only part of the facility managers' decision-making repertoire.

As a result, facility managers found that their time was highly fragmented by interruptions. This finding remains consistent with older work on the nature of management in the management science literature, suggesting that, at this level, the

nature of management has not changed. Mintzberg's empirical field work (1973, 2009) demonstrates that rather than being a "*reflective, systematic planner*" the reality is that "(a) managers work at an unrelenting pace; (b) their activities are typically characterized by brevity, variety, fragmentation, and discontinuity; and (c) they are strongly orientated to action" (Mintzberg, 2009, p19). Mintzberg cites other studies which support and quantify this finding:

*The reports on the hectic pace of managerial work have been consistent, from foremen averaging one activity every forty-eight seconds (Guest 1956:478) and middle managers able to work for at least half an hour with interruption only about once every two days (Stewart 1967), to chief executives, half of whose activities lasted less than nine minutes (Mintzberg 1973, p33).*

*Over forty studies of managerial work dating back to the 1950s have shown that 'executives just sort of dash around all the time' (McCall, Lombardo, and Morrision 1988, p55).*

Hales (1986) reviewed studies on time budgeting (Carlson, 1951 in Hales, 1986; Copeman et al., 1963, in Hales, 1986; Horne and Lupton, 1965 in Hales, 1986) and concurs that the nature of managerial work is frenetic; he adds that it is also reactive:

*... even senior managers spend little time on planning and abstract formulation; are subject to constant interruptions, hold short face-to-face meetings which flit from topic to topic and respond to the initiative of others more than they initiate themselves. (Hales, 1986, pp96-97)*

Kotter (1999) posits that the seemingly disjointed nature of information collecting and decision-making may in fact be a highly efficient response to multiple internalised agendas, which managers construct for themselves in understanding their job. He considers these agendas to be made up of loosely connected goals and plans that address multiple objectives over different time-frames and suggest that managers' observed behaviour may be efficient in moving between the multiple internal agendas. Whitley (1989, p216) supports this idea by saying that managing is "not so much focused on 'solving' discreet, well bounded individual problems as in dealing with a continuing series of internally related and fluid tasks" (emphasis added). Lower level operational managers have shorter time horizons than higher level strategic managers

(Management Sciences for Health, 2005). This research shows that facility managers engaged in a lot of decision-making that was immediate, on-the-spot, as well as a fair amount that was built into monthly routines. However facility managers, operating in the present, were also holding longer-term objectives, such as developing staff morale and building trusting relationships with the communities they served, and were at times responding to these agendas in how they managed the immediate problems.

Hales (1986), citing Brewer and Tomlinson (1976), understands the nature of managerial work to be a function of its complexity. Complexity in sub-district decision-making has already been demonstrated at this study site in earlier work by the DIALHS research team (Elloker et al., 2013), who found that sub-district managers managed a mix of expected and unexpected demands through a network of role players, and engaged in multiple formal and informal planning and management processes. This research now adds to the earlier finding, by demonstrating that complexity is also a feature in decision-making at the level below sub-district managers, i.e. for facility managers too. In doing so, it contributes empirical work on the nature and complexity of management of primary healthcare level, a topic which has not received much focal attention in the health system literature; (for an example of other such empirical work, see Daire and Gilson (2014) and Van der Veken et al. (2014). In keeping with Kotter's idea of multiple agendas, this research has demonstrated that facility managers' decisions were nested in or related to other decisions (Kotter, 1999). This finding is supported by more recent work which stresses the importance of systems thinking in understanding and developing health systems (de Savigny & Adam, 2009), arguing that there is an interconnectedness between interventions: *"every health intervention, from the simplest to the most complex, has an effect on the overall system"* (2009, p30). Health systems are therefore recognised to be complex adaptive systems (Begun et al., 2003; Gilson et al., 2014a; Marchal et al., 2014; Peters, 2014). Another finding in this research, which supports Kotter's idea of multiple agendas (1999) and which suggests complexity, is that decisions operated across different time scales and involved different objectives across these time scales.

## 10.3 Use of information

### 10.3.1 Facility managers *do* use information in decision-making

Facility managers in this multiple case study were found to use a wide range of information in operational decision-making. They used both formal and informal information, as defined by this research, on an on-going basis. This finding supports that of others (Williamson & Kaasbøll, 2009; Damtew et al., 2009; Østmo, 2007), who found local information about the particular communities served was used by facility managers in South Africa. In this research, formal information was pre-defined as *that which had been formalised through the health management process* (and included RHIS, formal minutes and formal counselling notes). Informal information was defined as *that which was not formalised* and an understanding of what it was comprised of was allowed to emerge from the findings. Informal information was found to include information that was local and particular, sourced through observations of people and processes, and continuous and ad hoc engagements with staff and clients, and knowledge built on the experience of managing in this particular context. This is similar to what Williamson and Kaasbøll (2009, p1) described as “soft data obtained from informal information systems” in their work with facility managers (also in South Africa) which was sourced through interactions with staff, peers, manager and community groups. They do not differentiate between different types of soft information, but they also note the importance of “the tacit knowledge of an experienced PHC manager” (Williamson & Kaasbøll, 2009, p8). While Mutemwa (2006) did not divide information used by his study participants (district managers in Zambia) into formal and informal, he found a similar range of information: written, verbal, observational, experiential and training. In this research training did not emerge as a separate category, perhaps because of the nature of the cases which focused on topics which are not generally included in clinical or management training programmes. Moahi’s work in Botswana (2000) was with managers at a higher level in the health system (national departmental and divisional heads, and hospital superintendents and administrators), and so it is not surprising that she found more aggregated, documented information being used

(statistics, reports, registers, budgets, norms); but she also notes informal information in the form of office discussions and telephone calls.

It has long been acknowledged that managers at different levels in the health system have different information needs. This is often represented as an information pyramid, with the facility and district level requiring more information than the national and global level ( Heywood & Rohde, n.d.; Lippeveld et al., 2000). However there has been very little attention given to how the information is different, and beyond that at facility level, the need is for more disaggregated information about more health problems (given that the local patterns of disease may be different from the national priorities).

This research clearly demonstrates that, at facility level, the information needed is more than the quantifiable information on local epidemiology, services delivered and health resources (i.e., the typical information from a district HIS recognised as necessary for local health planning and management of resources). This level is the frontline of people management and learning about the micro-practices of implementation. In addition to the current formal information, managers also need to have rich local information about their staff, facility and community context, and need to develop experience-based knowledge of managing in this context. This sort of information lies outside of the HIS and requires interaction with staff, clients, peers and the managers within their context, and a learning-orientated engagement with management practice. The range of information found in this research is in keeping with that suggested for PHC reform (Gilson & Daire, 2011):

*[Leaders use] a wide range of data and information in decision-making, going beyond the statistics normally produced by health information systems to draw on field-level experimentation and adaption, and identifying operational and systemic constraints. (Gilson & Daire, 2011, p71)*

This research supports the finding by Williamson and Kaasbøll (2009) that the use of *informal* information may not be recognised within the health system, and may not be understood to contribute towards a culture of information use. In their study, set in the same province and conducted around five years earlier, they found:

*... there is a strong well established culture of information use at PHC service level albeit one that is not formally acknowledged or formalised in the policy driven formal information system. (Williamson & Kaasbøll, 2009, p9)*

In this research, district and sub-district/substructure managers likewise lamented the lack of a culture of information use, yet facility managers were found to actively use a wide range of information. It would seem that, as much of this information was (by necessity) not from the formal HIS, it was not acknowledged as part of a culture of information use. Mutemwa (2001) found a similar situation in Zambia, reporting that decision makers *did* use information, just not that which was expected and desired by policy makers and system designers. He concurs with earlier work by March (1982) that there was a disjuncture between information that was used in decision-making and what was considered information, based on a narrow understanding of what constituted *information*. This was also found by Østmo (2007) in her study of primary healthcare managers in South Africa. She suggests that a definition of a culture of information use should, at least at the facility level, include local information and knowledge:

*Translated into the context of facility management, 'information culture' would include local and tacit knowledge, data collection and information use in the health work practice that is not visible in the formal information collection and evaluation process. (Østmo, 2007, p129)*

This research supports this expanded notion of an information culture and suggests that, in supporting local health managers, a re-framing of what is conventionally understood to be *health information* is needed. The Health Metrics Network (2008b) promotes the use of health information for decision-making, and offers an understanding of health information systems which draws together population-based data sources (such as vital registration, census and population surveys) and institution-based data sources (such as health service, health resource and individual records). This projects a conceptualisation of health information as formal information and can have the unintended consequence of devaluing the informal information and knowledge which is also essential to good management. In a commentary in *The Lancet*, Bailey and Pang (2004) respond to the call for “health information for all by 2015” by critiquing what is considered health information. They emphasise the

importance of experience, pointing out that strengthened HISs will not be sufficient to meet the information needs of managers. This is particularly in the management of complex situations which require innovation, such as in the ART scale-up:

*We need to move from a culture of expertise to one of experience, and tap into this rich local source of knowledge, both explicit and tacit. Yes, there is a critical need to understand local information flows, but to what end? Partly, so that established information sources can provide better information, but also so that we can focus more directly on how information is created and used locally ... Our notion of what is relevant knowledge needs to expand. As we are discovering in the scale-up of treatment for HIV in Africa, we need to rethink how knowledge is accessed and innovation generated to meet current health problems. (Bailey & Pang, 2004, p223).*

The findings of this research suggest that, alongside formal information, facility managers' use of local information about their context, facility staff and processes, and community needs to be legitimised in decision-making. This does not mean that it has to be incorporated into HIS, but it should be seen as part of the spectrum of information needed for facility management, and that its use is seen as contributing towards a culture of information use. Further, if informal information is legitimised, then attention must be given to how its use is supervised and managed at sub-district level. This point is further discussed in section 10.6.4.

### **10.3.2 Facility managers generate, as well as use, informal information and knowledge**

This research has described how information is not only *used*, but also *generated* in the routines and practices of management. For example, in doing observations on rounds of the facility, engaging with staff and clients and having meetings, facility managers gathered and generated information. This finding is supported by others (Mintzberg, 2009; Mutemwa, 2006; Østmo, 2007). Nonaka (1994) highlighted the importance of this distinction when he challenged the dominant thinking of knowledge management theory and practice in the early 1990s, which saw information as a resource to be processed in making decisions. Instead, Nonaka

argued that organisations should concern themselves with how they *create* information and knowledge, emphasising the importance of knowledge generation to innovation. Snowden (2002) has highlighted the importance of creating the conditions for knowledge generation to happen. Rather than generating and storing information and knowledge as a resource to be used later, he suggests an approach to knowledge management that brings together a group of people when a decision is needed, people who, together, are able to generate the knowledge that is needed to make the decision. He writes about enabling the flow of knowledge within a community of practice. In this research, the peer workshops conducted in phase 2 created the conditions for the flow of knowledge to happen. Facility managers came together around common problems and brought their experience to the table. They engaged in reflective practice which enabled learning and generated new knowledge. This dynamic flow is also evident in the case vignette of the reproductive health project (see Box 7.2), where, in reflecting on their experience, facility managers drew on existing, individual experience-based knowledge and generated new collective insights in managing the introduction of an appointment system. The value of this new collective knowledge is high as it is specific to context and highly applicable to the decision at hand. Writing about expert decision-making, Lord and Hall (2005) cite Newell (1990) to argue that the knowledge that *needs to be generated* shifts in relation to what is required by the decision:

*An important issue for understanding how leadership expertise develops is the recognition that knowledge is not created nor used as an unchanging and autonomous entity. Rather, it is often generated or accessed in response to the momentary requirements of one's current task (Newell, 1990), so that the knowledge available to a leader may vary depending upon the current context.*  
(Lord & Hall, 2005, p594)

The relevance of the organisational learning literature emerged in this research, as valuable knowledge was generating in learning from the experience of managing. In implementing policy intentions managers had to experiment with different strategies to improve programme performance, service delivery and staff management. To do so, as demonstrated in the vignettes of the immunisation campaign and in the reproductive health project, they engaged in a number of the *disciplines* or practices described in the organisational learning literature by Senge (1990); these included

reflective team learning, surfacing assumptions around appointment times, applying systems thinking to understand the nature of the client-provider relationships.

### **10.3.3 The contribution of informal information and knowledge to decision-making**

This research documents and affirms the value of informal information in decision-making. The dominant form of information used in managing leave of absence and the efficiency of service delivery was informal information and experience-based knowledge (at times because there was little formal information available). Even in the case exploring the management of programme priorities, in which formal information from the RHIS and periodic audits was seen to play a very important role, its use was heavily complemented by the use of informal information and knowledge.

The value of up-to-date local information and context-specific knowledge has already been acknowledged in the management literature. Mintzberg (2009, p46) cites Whitley (1989):

*managerial tasks are specific to context and thus dependent on knowledge of the particular organization and its problems, which are constantly changing.*

While there is less awareness of the value of informal information and knowledge in the HIS literature (the commentary by Bailey and Pang (2004) being an exception), this research contributes to a small body of empirical work that argues that it has an important role and needs to be acknowledged. For example, Mutemwa (2001) found that, in the eight strategic decision-making cases he studied, information derived from experience was the most frequently used. In Williamson and Kaasbøll's study (2009), facility managers accorded more relevance to the *soft data* obtained from informal sources such as feedback from staff, health educators.

This research supports the view put forward by Bailey and Pang (2004), who call for valuing experience-based knowledge in large-scale complex interventions, but goes further in arguing that it is needed in the operational management of primary healthcare facilities too, given the surprising complexity of operational decision-

making: the inter-related and nested decisions necessitate a range of different types of informal information and knowledge to complement formal information. Zack (1998) has theorised that knowledge enables decision-makers to deal with complexity as it allows a familiar, holistic view of a problem rather than dealing with each of its troublesome individual parts.

Various other reasons why informal information and knowledge is useful, or needed, have been put forward. Mintzberg (2009) posits that managers favour informal verbal information because it is richer:

*Formal information is firm, definitive – at the limit it comprises hard numbers and clear reports. On the telephone, there is tone of voice and the chance to interact. In meetings, there is also facial expressions, gestures, and other body language. Never underestimate the power of these. (Mintzberg, 2009, p27)*

Furthermore Mintzberg argues that, while reports from management information systems reflect performance that is already past, verbal information is often more current and so has higher value to a manager who needs to be up-to-date. Snowden (2002) argues that more information can be accessed and shared verbally than in the written form. He has added an addendum to Polanyi's much quoted assertion (1966, p4) saying "We can always know more than we can tell, *and we will always tell more than we can write down*" (Snowden, 2002, p6, emphasis added to show addendum). Williamson and Kaasbøll (2009) found that facility managers used informal information because they believed that their informants were more reliable than the RHIS.

This research adds the empirical work identifying the circumstances when informal information and knowledge is needed. First, in support of Williamson and Kaasbøll's finding (2009), it shows that informal information is used when there is an absence of reliable, accessible formal information. For example, in the absence of a functional HRIS facility, to identify individual staff who were potentially abusing sick leave and needed to be actively managed in this regard, managers relied on their feeling that a particular staff member was frequently submitting a leave request for unplanned leave, and on complaints from other staff members. Second, informal information is used where it represents vital information that cannot (or need not) be formalised.

This is most evident in the management of unplanned leave, which is not just a technical function guided by policy, but requires facility managers to use informal information as they apply their discretion on how to apply the policy. They draw on rich, local, mainly informal information about the particular staff members. Some of this is formalised and recorded in formal counselling and disciplinary processes, but much of it remains informal, yet still represents that which is known. Some of it is constituted of impressions and observed patterns of behaviour which cannot be expressed or are yet to be surfaced (and as such are tacit). Third, informal information is used when it is applied to practice and transformed into knowledge. While this is also possible with formal information, which can also be applied, informal information gathered from observations and engagements with staff, clients and other managers presents a rich source of potential learning about people and processes, how they work, why and under which particular circumstances. Facility managers need to be able to learn from experience and to bring this new knowledge to bear on subsequent decisions if they are to avoid repeating unsuccessful interventions and instead begin to adapt interventions to make them more successful in their particular context. Fourth, informal information is used together with formal information in a functional interdependence which is complementary. This last point is discussed in more detail in the next section.

This research further contributes an understanding of what the *particular value* of informal information is, which lies in its nature. Informal information that is local and particular to the particular setting enables managers to make decisions which are locally informed and responsive to staff and the community. Information about, and knowledge of how, why and when staff in a particular facility, or clients in a particular community, act and react to a particular stimulus, is important for the effective management of people. Causal knowledge (*know-why* in terms of cause and effects) and conditional knowledge (*know-when*) have high explanatory and predictive value respectively. Local causal and conditional knowledge are necessary to adapt interventions – a form of innovation (Osborne & Brown, 2011) – to suit the local context. They have high value in a management context where policy and guidelines cannot be blindly implemented, but have to be tailored and amended to the local situation to ensure that the policy intentions are met, such as in the scale up of large

public programmes (Gilson & Schneider, 2010). Successful local implementation during the scale up of large projects requires local adaptation of the innovation to local conditions, with *going to scale* understood as a learning process (Simmons, Fajans, & Ghiron, 2009). Finally, all forms of informal information and knowledge are important in the context of complex decision-making, where facility managers needed to balance programme priorities, multiple objectives and approaches across different time scales, be responsive to need, and be able to adapt and innovate.

#### **10.3.4 How informal and formal information work together**

Another major contribution that this research has made to the management and HIS literature is the description of how formal and informal information work together, and the development of a typology of four distinct relationships. In the independent relationship, formal and informal information are used interchangeably in the same management cycle. In the sequenced relationship, informal information is used for immediate management and formal information for longer-term planning. This is important given that different management objectives, all of which have information needs, operate over different timescales (Kotter, 1999). The other two relationships are each discussed in more detail.

In the relationship of functional interdependence, formal and informal information is used in complementary ways: formal information to correct informal information; informal information to correct or make sense of formal data; and formal information is as a lens through which strategies are evaluated and subsequent learning by experience is initiated. Within the empirical HIS literature, there is evidence of this relationship. Williamson and Kaasbøll (2009) found that facility managers understood their facilities' performance (represented by routine health information) in the light of what they knew about operational factors (facility processes and the community served). In Williamson and Kaasbøll's understanding, this led to *new* knowledge being formed. Functional interdependence is implicit in the data use cycle (Heywood & Rohde, n.d.; John Snow Inc., 2012; Lippeveld et al., 2000). Data has to be validated (which requires knowledge of the particular data collection and collation processes in the facility), interpreted (which requires seeing it together with other formal

information and in the context of the service setting) and acted on (which again implicitly requires local knowledge to decide on what strategies will be appropriate). This relationship is also supported by the Health Metrics Network framework for transforming data into information and evidence (Health Metrics Network, 2008b). This framework posits that information from the HIS, which is “evaluated in terms of the issues confronting the health system” (Health Metrics Network, 2008b, p42), is transformed into evidence. While not described in the model, this evaluation is presumably only possible in relation to what is known (tacitly and explicitly as well as formally and informally), about the health system.

Empirical evidence and theory in knowledge management literature further elucidates this functionally interdependent relationship. Importantly, according to knowledge management theorists such as Davenport and Prusak (1998), knowledge is a framework for interpreting and using new information (which would include formal information). McQueen (1998) understands experience to be an important lens through which the meaning of information is understood. Nonaka (1994) builds on Weick’s (1976) understanding of *sense-making*, to suggest that information must be understood in terms of its purpose and its context. Nonaka saw the interaction between tacit and explicit knowledge as complementary, driving the creation of new knowledge, an interaction which has been observed in this research between formal and informal information and knowledge. While the labels “tacit/explicit”, as used by Nonaka, and “informal/formal”, as used in this research, are not interchangeable, there is considerable overlap. The Cynefin framework developed by Snowden and his colleague, Kurtz (Snowden, 2002; Kurtz & Snowden, 2003) also supports the understanding that the use of informal with formal information is complementary in complex decision-making, as demonstrated in this research. Implicit in the Cynefin framework, and of relevance to this research, is that formal information (such as that from the HIS), needs to interact with emerging experience and knowledge for effective decision-making in complex decision-making settings.

The final relationship between formal and informal information and knowledge, found in this research, is an ontological conversion along a continuum between informal and formal information. The idea of a continuum between information and formal information mirrors that described in the knowledge management literature between

tacit and explicit knowledge (Ambrosini & Bowman, 2001; Assudani, 2005; Kogut & Zander, 1992; Tsoukas, 2003). Nonaka (1994) recognises that tacit knowledge can *become* explicit and vice versa. He calls the conversion of tacit knowledge into explicit knowledge “externalization” and the conversion of explicit knowledge into tacit knowledge “internalization.” Externalisation can also be thought of as surfacing tacit knowledge (i.e., bringing it to the surface and expressing it to make it explicit). Internalisation can also be thought of as beginning to take for granted that which was explicit, so that it becomes tacit. Likewise, informal information can become formal when it is recognised and formalised in the routines and practice of health management; and, formal information can become taken-for-granted and incorporated into sub conscious knowledge, thus becoming informal. The findings of this research demonstrate this conversion, and that information can be thought of as being on a continuum from informal to formal. For example, an insight shared over tea before a meeting (informal information) can then be reported and minuted within the meeting, thus becoming formal information. Polanyi argued that all knowledge is originally tacit (Polanyi, 1966). A similar phenomenon may well hold for information in the health system: that all information is informal until it becomes formalised in the routines and practices of the health system. While they exist along a continuum, the utility of recognising the extremes of formal and informal information lies in how the health system responds to each type, and the extent to which the health system enables their generation, and promotes their different uses. In this research, different values and relationships have been shown to underpin the differences. Importantly, the health system processes of formalising information also legitimise it for use in decision-making.

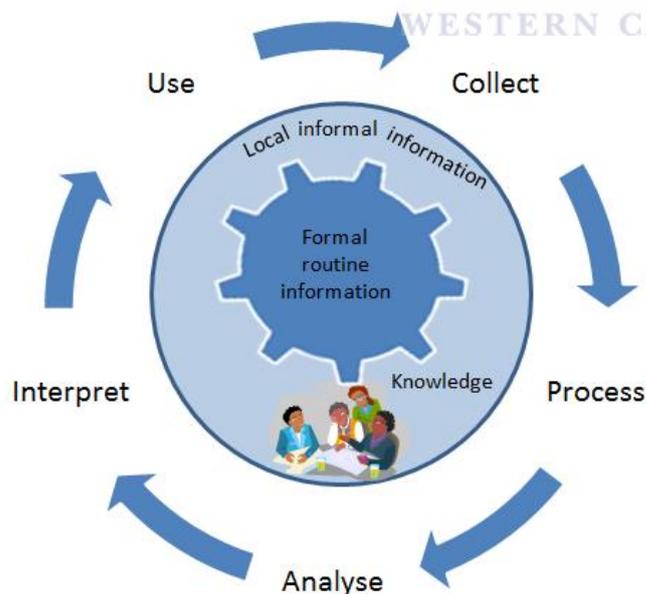
#### **10.4 Implications for supporting facility managers in using information in decision-making**

The poor use of information from HIS in decision-making has long been a focus of concern in the HIS literature (Aqil et al., 2009; Edwards & Lippeveld, 2004; Health Metrics Network, 2008b) and is one of the concerns which led to the formulation of this research. Attempts to improve information use in decision-making over the years have focused on various strategies which have evolved to include: ensuring that the

information is useful and appropriate to the level of use; engaging data users with data system designers; improving data quality so that the information is reliable and valid; pushing for information to be used so as to improve data quality and thus improve subsequent use; developing reporting channels and formats; building health information literacy; using information in performance targets, presenting data in innovative ways including *dashboards* and monitoring the quality of data (Health Metrics Network, 2008b; Heywood & Campbell, 1997; Loevinsohn, 1993; Sauerborn, 2000; Stansfield et al., 2006; Williamson & Stoops, 2001; RHINO, 2003; Nisingizwe et al., 2014). Failure to sustain information use despite intervention has been attributed to intervening with only one of two strategies at a time (Pact Worldwide / MEASURE Evaluation, 2014b). More recently attention has turned to broader interventions which seek to address technical, organisational and behavioural factors to support information use (Aqil et al., 2009). The MEASURE Evaluation Project (Nutley & Reynolds, 2013) has developed a logic model which maps out how a comprehensive set of intervention inputs and activities - drawn from the synthesis work by the Health Metrics Network (2008b) and PRISM (2009) and covering most of the key elements listed above - are expected to influence the outputs and eventual outcome of regular data use. Broad sets of interventions informed this logic, and have shown promising results (Nutley et al., 2014; Pact Worldwide and MEASURE Evaluation, 2014a, 2014b; Angelesal et al., 2012). The logic is however limited to the role and use of the formal HIS and understands the core competencies to build capacity to improve data use to be: “*skills in data analysis, interpretation, synthesis, and presentation, and the development of data-informed programmatic recommendations*”. (Nutley & Reynolds, 2013, p7)

This research has shown that facility managers use formal information in relation to other information and knowledge. This suggests that another supplementary way to improve the use of formal health information, once the HIS is functioning well and producing good quality data, is to enable facility managers to generate and use informal information and knowledge which is complementary to the formal health information. Informal information and knowledge has the potential to inspire the use of formal health information with *that which makes sense of it*, and to increase its utility by supporting its interpretation in the particular context. Strengthening the HIS on its own is an intermediary action which only improves the availability and

reliability of formal information. Enabling the use of formal health information lies more in the organisational and behavioural domain (Aqil et al., 2009). What drives the data use is not the HIS or formal health information it generates, but the managers who, acting in an organisational setting, use that information for decision-making, who interpret and act on information in the light of what they know. Using the image of a cog driving data use, it may well be that informal information and knowledge is the grease that prevents the cog from getting stuck before the desired end point, of data use to improve service delivery to improve health outcomes. In this research, this understanding has led to a re-imagining of the data use cycle which is shown in Figure 10.1. This research suggests that, in addition to the competencies required to analyse and use formal information, facility managers need to be able to be able to engage actively with staff and clients, to develop relationships of trust, to observe, experiment and reflect, to share experiences and to learn collectively. As shown in the Model of Health System Influence on Information Use in Decision-making (Figure 9.4 in Chapter 9 - Cross Case Analysis), these competencies need to be supported by attention to relationships between and within levels and actor groups of the health system, by the values that support these relationships and by the generation and use of both formal and informal information and knowledge.



**Figure 10.1. Re-imagining of the data use cycle: managers driving data use through informal information and knowledge**

## **10.5 The influence of the health system on what information is used, and how**

### **10.5.1 Multiple influences and pathways**

This research has clearly demonstrated the multiple influences of the health system context on decision-making and information use. During the iterative stages of analysis, the conceptual understanding of the health system context, which had been first framed by the WHO Building Blocks (2007), as shown in Figure 3.2 in Chapter 3, shifted to embrace the more dynamic representation developed by van Olmen et al. in their Health Systems Dynamics Framework (2010), shown in Figure 3.4 of the same chapter. The latter has, as its centre, an interconnected triad of leadership and governance; service delivery, and resources. This shift was supported by the empirical data, which suggested that different modes of governance influenced what information was valued, generated and used, and how. Further, van Olmen et al.'s Health Systems Dynamics Framework was found to be appropriate as it depicts an interactive relationship between service delivery and resources. In this research, which is particularly concerned with what influences information use, management processes and practices (which are part of what van Olmen et al. consider to be “service delivery”) emerged as being crucial in translating and mediating the influence of governance on information use.

The Model of Health System Influence on Information Use in Decision-making (Figure 9.4), represents another important contribution that this research has made to the health system literature. It demonstrates the dynamic interplay between governance; management processes and practices; and the values held and nature of relationships between, and within, the levels of the health system, showing how this influences the information that is valued and used in decision-making at facility level. When applied to the empirical findings, the model shows how different modes of governance act through management processes across levels of the health system and how they establish different relationships, are translated into management practices at sub-district level, and have a different impact on both the facility managers' decision space and on what information is valued and how it is used. In Chapter 9 - Cross Case

Analysis the model has been tested against the empirical evidence of this research and retained its explanatory power.

### **10.5.2 The importance of governance, and its link to management**

Health system governance has been recognised as a crucial leverage point for wider systems strengthening (de Savigny & Adam, 2009), operating as it does in its own right in the system, as well as in every other of the *building blocks* put forward in the WHO Health System Framework (World Health Organization, 2007a). Interestingly, the same claim is made for the centrality of health information systems:

*While each building block of the WHO framework is important to improving health systems and ultimately health outcomes, quality and timely data from health information systems (HIS) are the foundation of the overall system and inform decision making in each of the other five building blocks in the health system (Nutley & Reynolds, 2013, p).*

De Savigny and Adam (2009) suggest that information is an important resource for governance.

In their work on universal health coverage Fattore and Tediosi (2013) see the need for governance coupled with good management to implement effective policies. This view is supported by others in the health system literature (Mikkelsen-Lopez, Wyss, & de Savigny, 2011) and concurs with the finding of this research that governance, management and the use of information work together in a dynamic triad. In this research, the key governance functions which impacted on how information was valued and used were: steering priorities, overseeing the organisational structure and determining the nature of accountability influencing relationships and values. In considering how relationships and values play out at the level of implementation, this research embraces what Hill and Hupe (2002) call a *micro-perspective* of governance and contributes empirical evidence to understanding governance in this under-researched area of health system research (Scott et al., 2014).

This research has found that the modes of governance (authoritarian, transactional and persuasion) put forward by Hill and Hupe (2002) are useful in understanding *how*

governance influences the use of information in different ways. In this research, both the authoritarian and transactional modes are evident as part of the national context influencing local practice. Firstly, the South African health system functions as a bureaucracy with a strong hierarchical structure and measures of control (von Holdt, 2010); it has taken on some aspects of new public management approaches in the public sector reform post-1994 (Cameron, 2009) such as the framing of national departmental 5-year Strategic Plans as *National Service Delivery Agreements* with set targets against which performance is then measured (National Treasury, 2007). However, secondly, there is also an emerging form of governance by persuasion, at both a national level - as seen in A Policy on Quality in Health Care for South Africa (Department of Health, 2007) - and at a local (sub-district/substructure) level, where the use of peer review and collective learning practices represent more horizontal accountability mechanisms. Hill and Hupe (2007, p287) argue that the three modes of governance are “logically equal” and that the appropriateness of adopting one or the other depends on the context.

While the modes of governance work across the levels of the health system, the modes of implementation are relevant to the local level of decision-making, which, in this research, is understood to include the level at which the facility managers operate, as well as the sub-district level. Hill and Hupe’s understanding of modes of implementation, with different forms of accountability creating different relationships, fits well with the empirical findings of this research. Local implementation by enforcement and performance are seen in the use of standard operating procedures and in the tracking of progress towards targets in management and supervisory practices. It requires facility managers to produce and use formal information that can be verified and passed up the system in summarised form, as this allows the checks and balances required at higher levels of the system and enacts vertical accountability. However there is also evidence of local co-production in how sub-district management encourages facility managers to work together in collective learning, around priority programmes. This mode of implementation enables facility managers to engage in participatory approaches to generate and use the type of information (be it formal or informal) that is most useful for the problem at hand, and supports learning from experience. With facility managers working towards to a common

vision of improved service delivery and responsiveness to clients, horizontal accountability and trust-based relationships are enacted.

### 10.5.3 A dynamic understanding of what influences information use

The Model of Health System Influence on Information Use in Decision-making (Figure 9.4 in Chapter 9 – Cross Case Analysis) is congruent with van Olmen et al.'s (2012) Health System Dynamics Framework, which incorporates systems thinking in positing a dynamic relationship between leadership and governance, resource inputs (information and knowledge, human resources, finance and infrastructure and supplies) and health service delivery. Like van Olmen et al.'s framework, this model describes a dynamic triad with governance at its head; however, it only focuses on one of these *resources for delivery of health services* - the information and knowledge that informs decision-making, which is the topic of this research - and instead of considering service delivery broadly, it focuses on the influence of management processes and practices. Van Olmen et al.'s framework is broader than the triad, linking service delivery to outcomes and health system goals. Further, it recognises the context which frames the design and development of the health system, the need to respond to population needs and preferences, and the values which both inform and emanate from the health system. The omission of these factors from the dynamic triad in the model developed in this research does not suggest that they are not important. Rather the model brings into sharp focus the influence of governance and management on decision-making and information use. Like van Olmen et al.'s framework, it can be used as an analytical tool and represents a “middle range theory”, which, within the field of health policy and systems research has been defined as

*ideas about how the world works, comprising categories and concepts derived from analysis, and suggestions about how they are linked together.* (Gilson et al., 2011, p2)

In Realist Evaluations, a methodological approach which is gaining ground in Health Policy and System Research (see for example: Best et al., 2012; Greenhalgh et al., 2009; Macfarlane et al., 2009; Maluka et al., 2011), a *middle range theory* describes the mechanism (M) whereby a programme intervention (in this case) works to achieve

an outcome (O) in a given context (C), thus creating C-M-O configurations (Pawson & Tilley, 1994). While not framed as a Realist Evaluation, this research has developed a model which describes how, in the case of facility managers in a district health system, an interplay of governance and management processes working across the health system (context) is translated into local management practice (the mechanism) and works to influence the use of information (outcome). The model is developed from empirical data on facility managers, and is useful in that it describes what influences their use of information as implementers in the health system. However it is likely that this model can be used to understand what influences information use at other levels of the health system too. What is unique about primary healthcare facility managers is likely to be *what* information they use, rather than the dynamics of *how* their information use is influenced within the health system.

## **10.6 Implications of a health system approach**

### **10.6.1 A case for an integrated approach to health system strengthening**



Taking as its starting point the information needs of facility managers, this research and model also offers a bottom-up perspective on what form health system strengthening initiatives should take to improve service delivery, a necessary intermediary in working towards the ultimate common goal of the health system, which is improved health outcomes (World Health Organization, 2007a). Importantly, it supports an integrated approach to health system strengthening, as portrayed in van Olmen et al.'s (2012) model, which sees the input resources being coordinated by governance efforts and working together to improve service delivery. The WHO Health System Framework (World Health Organization, 2007a) is less helpful in this regard, with its six *building blocks*, as it does not demonstrate the interactions and synergies that exist between the essential functions of leadership and governance, service delivery, health workforce, health information, financing and medical technologies (de Savigny & Adam, 2009; Mikkelsen-Lopez et al., 2011).

This case study shows the potential danger of working in building block silos to strengthen one function without sufficient attention to the others. Health system strengthening, which addresses the HIS without considering the types of decisions made and the informational needs of all managers, runs the risk of undermining managers at some levels. Typically HIS provides the summative information that is required by higher levels of managers (district and above) in strategic planning and monitoring (Theo Lippeveld et al., 2000). In particular this is not sufficient for the operational management required at facility level, which also requires local information and knowledge, based on experience. The HIS contributes to health system strengthening inasmuch as it provides the information that managers need. In this research, much of the information required to manage people and be responsive to clients and communities, lies outside of the HIS. Mutemwa's work with district managers in Zambia (2001) has also shown that the HIS only provides some of the information used in decision-making. He argues that people and processes bring in *other* information, and that it is important to think about the organisational structures that legitimise this information. A strong HIS which feeds rational planning models that do not acknowledge the operational reality of the often messy, on-the-spot decision-making needs of managers, can, perversely, weaken decision-making if it diverts managers from developing informal sources to generate the sort of information and knowledge they require to be able to adapt and innovate. There is some evidence that a re-orientation of the HIS at district level is needed to support organisational learning (Cecez-Kecmanovic & Janson, 2006). Ironically, strengthening the HIS in its current form may impact negatively on the decision-space and limit the type of information available to the facility manager.

Broadly, a bottom-up perspective recognises the influence of the health system on the facility managers' lived decision space, their management priorities, decision-making processes, and the information which is available and valued. This speaks to the need to intervene at multiple levels of the health system to improve information use, and has implications for governance and management processes across the health system, as well as for local governance and management practices.

## 10.6.2 Addressing governance across levels of the health system

Governance is responsible for overall system design and strengthening. As argued above, there is a case to be made for integrated health system strengthening. A strengthened RHIS will not achieve the desired health improvements unless coupled with improvements in the related information systems for health resources (given the importance of human resources, medicines and technology, and infrastructure in delivery services) and with strengthened management capacity to use this information.

Further, the WHO recognises that “(t)he generation and strategic use of information, intelligence and research on health and health systems is an integral part of the leadership and governance function” (World Health Organization, 2007, p18). At the international level, the WHO’s agenda for action is to promote a systemic health systems research agenda, and to increase access to and use of new knowledge management technologies, while at the national level, the agenda for action is strengthening capacity in health policy analysis. In strengthening health information the focus is on the “development of health information and surveillance systems with improved population and facility-based information systems” using standardised classifications, methods, tools and reporting, and providing “a synthesis and analysis of country, regional and global” (World Health Organization, 2007, p19). While these aspects are important, this research suggests a broader agenda is necessary.

Van Olmen et al. (2012) posit that an important act of governance is to make values, and inherent tensions between values, explicit. Health systems are social institutions that are inherently relational (de Savigny & Adam, 2009; Gilson, 2003; Midgley, 2006). They are shaped by societal values and also express values in their structure and processes, in the relationships they create and in their activities (Gilson, 2003; McIntyre & Klugman, 2003; Scott et al., 2014; Scott, Mathews, & Gilson, 2012; Sheikh, George, & Gilson, 2014; Wang et al., 2002). Hill and Hupe (2007) remind health system designers and policy makers that different forms of governance operate in the health system and are “logically equal”; they also assert that these different modes of governance value and use different types of information and knowledge. At present, perhaps in response to the monitoring needs of global agendas such as the

MDGs, global and national governance places great value on formal information. Therefore, across all levels of the health system, there is a need to acknowledge and legitimise the complementary role of informal information and knowledge, both in relationship to, and independent of, formal information. This supports an expanded notion of *an information culture*. It also requires a broader set of values that acknowledges and appreciates locally responsive management and organisational learning as critical to improving health system performance at all levels, in addition to increased vertical accountability. Organisational learning requires a change in organisational culture so that it becomes safe to experiment and to learn from failure as well as success (Snowden, 2011).

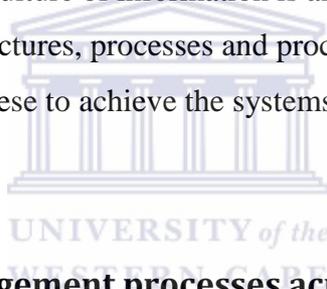
Governance at sub-district level needs to demonstrate understanding of and act to support the broader information needs of facility managers, seeing them as “managers who are more than administrators, managers who understand a given context and are able to take appropriate action” (Gilson & Daire, 2011). At sub-district level, leadership is required in resisting false dichotomies about what information is valued, instead holding together and valuing both formal and informal information for their respective strengths and complementary relationship. Mintzberg describes this as a conundrum:

*[Managers] cannot avoid hard data – how else do they manage a large complex organization? – yet they cannot become prisoners of it. Nor can they let themselves become prisoners of vague, idiosyncratic, soft information. The mysteries of measuring are a conundrum because, once again, there is no simple answer, no easy way out. Each manager has to find his or her own balance, not least by ensuring enough of each kind of information to check out the other. (Mintzberg, 2009, p179)*

However this research suggests that informal information need not be vague and idiosyncratic. Facility managers can use it to give account to their peers and managers, and rigour is possible in organisational learning. Rather, holding together formal and informal information is fundamentally a sense-making role for sub-district and facility managers; (for an understanding of sense-making in this context, see Gilson et al., 2014b). That information can be used both for accountability and learning, requires that different values are held together in a creative tension, which

contributes to the complexity of sub-district management (Elloker et al., 2013). There are no simple rules about how to support facility managers in generating and using formal and informal information and knowledge. As shown in this research, individual facility managers used their decision space and learnt differently. This may be accounted for in part by differences between novice and experienced or expert facility managers (Lord & Hall, 2005), the role of previous experience in framing current challenges (Schön, 2001), and differences in managerial mind-sets (Gosling & Mintzberg, 2003; Mintzberg, 2009). Other individual level differences may also have existed.

A culture of information has been described as having “shared meanings” which are implicit in beliefs and values related to information and its use: this research has demonstrated the role of governance in valuing different types of information and making sense of their use. A culture of information is also embedded and represented more tangibly in systems, structures, processes and procedures. There is a further governance role in aligning these to achieve the systems goals. These are discussed in the next two sections.



### **10.6.3 Addressing management processes across the health system**

Currently management processes such as strategic planning, performance management and supervision, value formal information. However the role of local, contextual information in mediating between top-down and bottom-up planning at facility level in a district health system is being recognised (Gilson et al., 2014b). Performance management based on a limited set of targets can be detrimental to health system performance: it has been shown to shift management attention to that which is measured and to introduce “hitting the target and missing the point”, where the measurable target is reached but not the desired service delivery output (Bevan & Hood, 2006). Much of the core function of facility managers has to do with managing the people who are delivering the service, and this cannot be measured with formal targets. Further, performance management that focuses on whether or not targets are met, tends to detract from the organisational learning processes which typically generate knowledge that is not quantifiable, and which requires individual or

collective reflection. Facility managers need measures of performance which are based on broader assessments of how they perform their role, particularly with respect to how they manage relationships with staff and clients. Tools for self-appraisal or multi-source feedback (such as the 360 degree appraisals which draw on peers, subordinates and managers) could be considered (Fletcher, 2001).

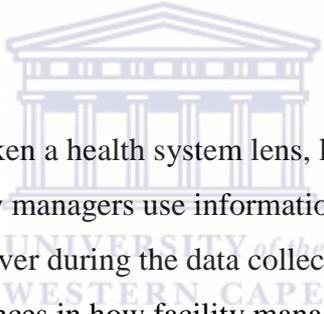
While supervision is widely recommended, it is a complex intervention and is understood and implemented in different ways in primary healthcare settings (Bosch-Capblanch & Garner, 2008; Bradley et al., 2013). Facility supervision can be used to link the peripheral facility to the district (Segall, 2003) and to motivate staff if adequately resourced (Lehmann et al., 2008; Wang et al., 2002; Bradley et al., 2013). There is some evidence of benefit on healthcare performance: for example, in combination with audit and feedback, it has been found to improve performance (Rowe et al., 2005). However supervision that is focused on inspection, control and fault-finding, has also been found to have negative effect on morale (Rohde, 2006; Frimpong et al., 2011). The need for a new approach to supervision is increasingly seen as important (Marquez & Kean, 2002; Rohde, 2006; Gilson et al., 2014). There is evidence that supervision, where the health worker feels understood and supported by the supervisor, is more effective than fault-finding approaches (Frimpong et al., 2011). This has led to the conceptualisation of what is being called “supportive supervision” which aims at “strengthening communication, focusing on problem solving, facilitating teamwork, and providing leadership and support to empower health providers to monitor and improve their own performance” (Marquez & Kean, 2002). It can encompass a wide range of formal and informal, one-on-one and collective activities taking place on the job and in and outside meetings. It includes designated and informal supervisors, informal supervisors and peers, and health providers themselves (Marquez & Kean, 2002). This research supports such a notion of supportive supervision. Supervisory processes consisting of completing checklists and assessing progress towards meeting targets, generate and use formal information, but reduce the opportunities to directly address the particular problems experienced by individual managers, and so reduce the opportunity to learn from experience; this includes activities which would generate and use informal information and knowledge in addition to formal information.

#### 10.6.4 Addressing local management practices

If governance approaches value the use of informal information, and knowledge as complementary to formal information, and if they are to be required in management processes, then there is a need to support practices that generate such information and knowledge. To ensure sustainability, these practices need to be embedded within the routines of facility and sub-district management. In this research, there are three forms of informal information and knowledge, which were highly valued and used by managers. The first form is the rich, local information that allows managers to be responsive to local needs and expectations. Facility managers have found how valuable it is to routinely walk around their facilities to observe their staff and facility processes at work, and to engage with staff and clients. Being accessible and building trust in relationships with staff and, in the case of second-level managers, their HODs, has emerged as important to ensuring that facility managers have a reliable, accurate stream of pertinent information on the key management issues in their facility. Scanning the environment for and communicating information have long been acknowledged as important roles for managers at all levels (Mintzberg, 2009). Trust has been shown to play an important role within health systems (Gilson, 2003). The second form is knowledge about particular staff members which enables people management. Facility managers found that formal and informal engagements alike, yielded this, and required an openness to understanding each staff member's circumstances, their particular motivation and how they responded to support and corrective action. The third form is knowledge generated from the experience of managing: causal and conditional knowledge had particularly high value in enabling facility managers to adapt policies and practices to their setting and to innovate. They were generated where there was opportunity to learn from experience. This was facilitated through collective reflective practice and peer discussions. Specific project meetings (like the Reproductive Health Project) and dedicated time within routine management meetings were structures introduced to support these practices. Formal information was sometimes used in this learning (such as a review of routine health information in PDR processes) but there was a shift in practice: instead of focussing on formal health information as a yardstick against which performance towards targets were measured, facility managers were supported in interpreting the

information in the light of the local community and facility context. This involved considering how to intervene to improve facility performance, and reflecting on what they were learning about the challenges and opportunities from their relative implementation successes and failures. Some difficulties have been identified in teaching reflection such as reflection without learning, intellectualising reflection, and trying to develop “recipes for success” that are blindly followed (Boud, 1999). Reflective practice can be supported by creating a facilitative, safe environment, setting aside time to reflect, providing mentorship and supervision, and involving peers in a supportive network (Mann et al., 2009). Learning from experience more broadly involves surfacing tacit knowledge. Affect-based trust increases the willingness to share tacit knowledge, while cognition-based trust has been found to increase the willingness to use tacit knowledge (Holste & Fields, 2010).

## 10.7 Limitations



This research has explicitly taken a health system lens, looking at the influence that the broader system has on how managers use information, rather than considering individual-level factors. However during the data collection and processes of analysis, there were glimpses of differences in how facility managers, as individuals, approached decision-making and dealt with the multiple and differing expectations of their line managers, staff, clients and communities. Some of these differences related to different managerial mind-sets and levels of experience. Gender did not emerge as a difference, but this may be because all four co-researchers were female, although three males were represented in the peer group, which validated the rich case descriptions based on the individual work with the co-researchers. While individual level differences were not the focus of this research, the fact that they exist is important in thinking about the health system support to support facility managers: there are no simple rules in a complex system where individuals are different. Further research into individual level factors would be complementary to this research. The current literature has already recognised and begun to consider the individual-level “behavioural determinants” (Aqil et al., 2009) of improving health information systems and the use of routine formal health information. Going forward, there is a need for research that focuses on *behavioural* and other individual level factors that

influence the use of informal information too. The role of intuition, judgement and affect emerged as important in the literature review which informed the conceptual framework that guided this research. The choice of a qualitative case study design, so appropriate for studying complexity and context, was limiting in relation to these phenomena which are difficult to study reliably (Sinclair, 2010) and, in the field of psychology research, are often explored in laboratory settings or with survey methods. These phenomena often operate at an individual level but again are relevant to the broader purpose of this research, in that thought must be given to how the health system, as the context in which facility managers work, enables the appropriate expression, development and use of intuition, judgement and affect in decision-making.

This research has recognised the importance of tacit knowledge in informing decision making. It has also acknowledged that tacit knowledge can be difficult to surface and so employed particular strategies to help facility managers tap into their existing tacit knowledge, and generate further, for example, story-telling, recounting a critical incident, interpreting a mindmap. While these strategies were found to be very useful, inevitable limitations remain in accessing the deeper tacit knowledge which is either so taken-for-granted or so unconscious, that it cannot be expressed. As this research has shown, the use of information is also value-laden. It may be that situations arose where facility managers were reluctant to disclose the use of certain types of information, particularly if they felt that these types were not valued in their organisation or in the research process. Zack (1999) has warned that articulating particular types of knowledge may not have been culturally legitimate. In this research, the creation over time, of a respectful relationship of trust between the researcher and co-researchers, and the negotiation of a co-produced learning process, were important actions taken to mitigate this potential problem. Again, while helpful, this would have not been perfect, and so remains a limitation.

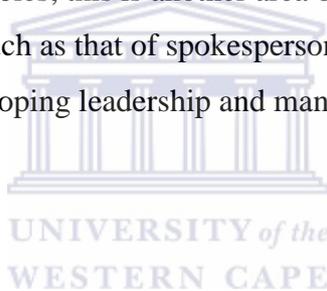
The three cases in this research were selected first, as potential levers of health system strengthening at facility level, and second, because they represented both highly-scripted and unscripted decisions. It may be that cases involving other areas of management, such as the management of procurement and finances, would have illuminated additional types of decisions using information differently. Therefore this

research cannot claim to be exhaustive in identifying how the different types of information and knowledge are used in relation to one another. The important claim made in this research is that facility managers used both formal and informal information, and that they often used them together. This research begins to develop a typology of how formal and informal information are used together, but this could be extended through research on other areas of management responsibility. The particular cases selected in this research are however likely to be relevant to the theory about how primary healthcare facility managers in a district health system in a developing country context use information. Malterud (2001, p484) states that “the nature and extent of the data will ascertain which conclusions can be drawn about what”. As this a case study design, it is not possible to generalise to other facility managers in this context as a population group, however analytic generalisation has been possible, and this has provided important theoretical insights, as discussed in this chapter, about information used by managers of primary healthcare services in a district health system.

The research setting is a fairly well-administered and managed sub-district health system, despite there being two authorities. The advantage of this is that it presented the opportunity to conduct research that explored management that was functional, rather than dysfunctional. It may be that the information used and the influences of the health system context in a stressed and poorly-functioning health system are different. The level at which the research was conducted is also significant. The importance of local knowledge of staff, facilities and processes found in this research, is a function of focusing on the level of implementation. The current wisdom in health information systems is that information needs (implicitly understood as formal information needs) vary across different levels of the health system (World Health Organization, 2009; Abouzahr & Boerma, 2005). This research has highlighted the importance of informal information and experience-based knowledge, and this raises the question of whether these too vary across levels of the health system. For example, one might speculate that, at a national level, tacit knowledge about the political context and relations would replace the particular knowledge about staff members and teams required at facility level as relevant *local knowledge*. Emerging from this research, a new hypothesis might be framed as follows: what constitutes informal information and

knowledge varies at different levels, but is still used complementarily with formal information at each level. This requires further research.

This research has focused on the use of information in decision-making. It has not explored how different types of information are used differently for other purposes. From empirical fieldwork, Mintzberg (1973) has identified a set of ten roles, three of which he categorised as informational – the monitor, disseminator and spokesman. Williamson and Kaasbøll (2009) have shown that all the roles use information, though for different purposes. Others have tested these roles in simulation experiments (Shapira & Dunbar, 1980) and suggested that all ten roles can be re-categorised as either informational or related to decision-making. In this research, the focus was on information and decision-making in three areas of management responsibility. Mintzberg's ten roles were not further explored, and it may be that *how information was used* varied across these roles; this is another area of potential research. Supporting leadership roles such as that of spokesperson and figurehead are important in the current context of developing leadership and management.



## 10.8 Conclusions

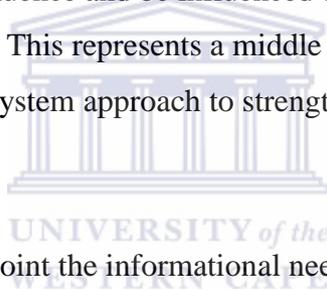
In summary, this research contributes to local knowledge of how to improve the management of primary healthcare service delivery in the Mitchells Plain health sub-district and Klipfontein-Mitchells Plain substructure, Cape Town. In working with facility managers and their sub-district/substructure managers, this research has identified and explored the role of different types of information, highlighting the oft-overlooked value of local, informal information and experience-based knowledge in decision-making. Working through established relationships and processes of engagement with senior district and provincial managers within the DIALHS project, this research is expected to influence thinking on how to support facility managers in decision-making across the wider district and province, specifically in relation to the system supports and broader notions of governance and leadership.

The use of a case study design and attention to context allows this research to be generalisable to theory, and therefore contributes to the health management, and more

broadly to the health system, literature an understanding of what the nature and scope of decision-making is at facility level within a district health system. It has shown that the predominant mode of decision-making is less rational than policy-makers and planners assume, that it is characterised by problem solving and works with profound tensions in the health system. Operational management at facility level can indeed be complex: decisions were nested in or related to other decisions, and involve people management as much as the management of processes and services. This research has shown that the information that facility managers need, and actually use, in managing facilities includes informal information and knowledge, which is often complementary to the use of formal information at this level of the health system. This is an important insight for those developing and managing health information systems. A causal mechanism is suggested for strengthening the use of formal information at the level of implementation (facility and district settings), which is expected to contribute significantly to current thinking on how to address the chronic problem of poor use of information from HIS in decision-making. Independent of formal information, informal information and knowledge have also been shown to be vitally important in the complex decision-making that is required: in managing staff productivity and staff morale, and in managing relationships with clients, communities, support staff in the sub-district/substructure office and their managers.

This research shows that the value of informal information and knowledge lies in its nature. In being local it enables managers to make decisions which are locally-informed and responsive to staff and the community. Experience-based knowledge can be causal knowledge and conditional. These types of knowledge have high explanatory and predictive value respectively, which is important in a context where interventions need to be adapted to suit the local context and where local innovation is encouraged. This research therefore challenges what is conventionally understood to be *a culture of information use*, and suggests a wider definition that acknowledges and values local particular information and experience-based knowledge. Importantly this requires health system designers and policy makers to think about how to support and encourage the wider range of information that is needed by managers at the level of implementation.

This research has shown a relationship between what information is valued by the health system context, and what information is generated and supported in decision-making. Concurring with current global thinking about health system strengthening, governance emerged in this research as a crucial factor in influencing what and how information was used. Drawing on Hill and Hupe's theoretical understanding of three modes of implementation (Hupe & Hill, 2007), this empirical research offers an explanation of *how* governance influences the way in which facility managers generate and use information in decision-making, bringing into focus the importance of local management practices too. This research has also demonstrated the relevance of system thinking to understand macro- and meso-level health system influences on the practice of primary healthcare facility managers at the level of implementation. A model for the health system influence on information use has been developed from the empirical evidence, consisting of a dynamic triad with governance at its head, working through values to influence and be influenced by management processes and practices and information use. This represents a middle range theory that is useful to those who are interested in a system approach to strengthening support to facility managers.



Finally, taking as its starting point the informational needs of facility managers, this research offers a bottom-up perspective arguing for an integrated approach to health system strengthening which moves beyond the WHO's six *building blocks*. It shows the importance of integrating HIS strengthening so that, at district level, attention is also given to the development of human resource and procurement information systems and generating the sort of information that facility managers need.

Furthermore this research shows the importance of locating HIS strengthening within broader governance and management strengthening. This has implications for health system governance across levels of the health system, which include supporting an expanded concept of *information*, valuing informal information and knowledge, making sense of how they work together with formal information and enabling an organisational culture where it is safe to experiment and learn from failure as well as success. It may require a re-orientation of the HIS at district level to support organisational learning. This research suggests how a shift in valuing the use of informal information and knowledge could find expression in management processes across the health system, such as in supportive supervision, and more holistic

approaches to performance management. There are also implications for local management practices such as ensuring that opportunities to gather local and particular information, and to learn from experience, are introduced into the daily and monthly routines of management practice.



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## Appendices

<b>Appendix</b>	<b>Contents</b>	<b>Referred to in:</b>
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Appendix 2	Job descriptions of the facility managers in City Health	Chapter 4 and 5
Appendix 3	Job descriptions of the facility managers in MDHS	Chapter 4 and 5
Appendix 4	Participation Information Sheet and Consent Form for co-researchers	Chapter 4
Appendix 5	National policy and guidelines on planning	Chapter 5
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## Appendix 1. Documents for review and data to be extracted

This is relevant to section 4.9.4.

**Table A.1. Documents for review and the anticipated data to be extracted**

Document	<ul style="list-style-type: none"> <li>• Anticipated data</li> </ul>
National Health Act National Department of Health Strategic Plan (Green paper) Comprehensive Service Plan Strategic Plan 2010-2014 Annual Performance Plan 2010/11 Healthcare 2010	<ul style="list-style-type: none"> <li>• Authority, roles and responsibilities in decision-making across the three tiers of government</li> <li>• The expected and actual role and nature of health information in decision-making across the three tiers of government</li> <li>• Key issues raised at the national and provincial level that are relevant to decision-making, and to the health sub systems that influence the use of health information in decision-making</li> <li>• The structure, authority, roles and responsibility of the district health system</li> </ul>
Facility managers job descriptions	<ul style="list-style-type: none"> <li>• Scope of expected decision-making processes</li> </ul>
Facility managers job appraisals	<ul style="list-style-type: none"> <li>• Scope of expected and actual decision-making processes</li> </ul>
Minutes of sub district management meetings attended by facility managers Minutes of facility meetings that facility managers have with their staff	<ul style="list-style-type: none"> <li>• Scope of actual decision-making</li> <li>• Identification of cases</li> <li>• Examples of how information use in decision-making is recorded</li> </ul>
Actions plans developed by facility managers	<ul style="list-style-type: none"> <li>• Outcomes of decision processes to inform focused interviews with facility managers</li> </ul>

## Appendix 2. Job description of the facility managers in City Health

This is relevant to section 4.9.4

### JOB DESCRIPTION FORM

(Approved by JEWG on 9 December 2002)

#### SECTION A: JOB TITLE AND INFORMATION SECTION

A.1 POST IDENTIFICATION	
Municipality	City of Cape Town
Post Title	CLINIC MANAGER
Number of posts	
Job grade	
Date grade authorised	
Post identification No/s.	
Name of Incumbent(s) and Service numbers	

A.2 LOCATION OF POST	
Directorate	Health Directorate
Department	City Health
Section	City Health
Unit	

A.3 SUROUNDING POSTS	
Immediate superior	
Job Title	Post identification number
Health: Personal Primary Health Care and Programs	

<b>Immediate subordinates</b>	
<b>Job Titles(s)</b>	<b>Post identification No/s.</b>
Senior Professional Nurses Clinical Nurse Practitioners Professional Nurses Enrolled Nurses Enrolled Nursing Assistants Clerks Radiographer Operators Pharmacists Pharmacy Assistants Senior Workers	

## **SECTION B: JOB PURPOSE, DUTIES AND RESPONSIBILITIES OF THE POST**

### **B12 JOB PURPOSE**

**To manage a personal primary health care service at facility level, aligned to the sub-district goals to ensure an effective, efficient, quality primary health care service**

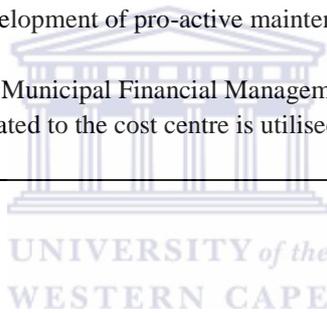
### **B.2 DUTIES OF THE POST**

<b>NO</b>	<b>DUTIES/TASKS</b> (What, How and Why)	<b>FREQUENCY</b>
1	<b>OPERATIONAL PLANNING</b> Participating in the development of the sub-district operational business plan by: <ul style="list-style-type: none"> <li>• Developing goals and objectives for a primary health care centre aligned with the sub-district business plan</li> <li>• Developing and implementing action plans for the primary health care facility</li> <li>• Developing and managing processes to facilitate service delivery.</li> <li>• Designating PHC portfolios to staff</li> <li>• Informing and implementing policy, programs and procedures at facility level</li> <li>• Implementing legislation pertaining to Personal Primary Health Care</li> <li>• Planning, co-ordinating and evaluation out-reach campaigns</li> <li>• Implementing new PPHC programmes/services and projects</li> <li>• Co-ordinating research projects related to PPHC and implementing recommendations at facility level</li> <li>• Responding to infectious disease notifications and outbreaks to a delegated geographical area in the sub-district</li> <li>• Developing a Health Promotion plan for the geographical area</li> <li>• Authorisation and delegation of tasks to subordinates</li> </ul>	

	<ul style="list-style-type: none"> <li>• Relieving the Program Manager on request</li> <li>• Working towards functional integration in a shared facility</li> </ul> <p>To ensure a quality Personal Primary Health Care Service to the community</p>	
2	<p><b>HUMAN RESOURCE MANAGEMENT</b></p> <p>Management and supervision of Personal Primary Health Care Staff within a facility:</p> <ul style="list-style-type: none"> <li>• Supervising and monitoring performance of staff e.g. absenteeism</li> <li>• Mentoring, coaching, guiding and supporting personnel including support staff</li> <li>• Ensuring the implementation and compliance of Human Resource policies and procedures according to National, Provincial and Local Government legislation</li> <li>• Adhering to the Labour Relations Act and the City of Cape Town's disciplinary code</li> <li>• Maintaining discipline at facility level</li> <li>• Implementing disciplinary procedures/corrective action when the Disciplinary Code and policy are not adhered to</li> <li>• Initiating and chairing Labour Relationship procedures as requested</li> <li>• Identifying training and development needs of personnel at facility level</li> <li>• Compiling a Work Place Skills development plan for personnel at facility level</li> <li>• Scheduling of staff to attend training courses as outlined in the Skills Development Plan</li> <li>• Assisting the HR/Programme Manager with recruitment and selection of personnel</li> <li>• Utilising staff effectively by task and program allocation</li> <li>• Motivating staff to be sourced from private agencies</li> <li>• Conducting performance appraisals of personnel under supervision</li> <li>• Participating and facilitating in the compilation, revision and amendments of job descriptions</li> <li>• Co-ordinating student training with a facility to comply with the learning objectives of the training institutions</li> <li>• Managing allocated personnel from non-government organisations, agency, contract, sessional personnel and volunteers at clinic level</li> <li>• Ensuring that the personnel are registered with professional bodies</li> </ul> <p>To ensure the optimal performance of personal Primary Health Care Staff at facility level.</p>	
3	<p><b>COMMUNICATION</b></p> <ul style="list-style-type: none"> <li>• Implement external and internal communication plans within the community and facility by:</li> <li>• Developing and implementing a facility communication plan and ensure feedback to personnel</li> <li>• Attending meetings, conferences, task team meetings, program meetings with both external and internal role players. E.g. such as TB/HIV/Woman's Health, Sexual &amp; Reproductive Health etc.</li> <li>• Attending monthly sub-district management and support meetings.</li> <li>• Attending and actively participating in Plan Do and Review (PDR) sessions at sub-district level.</li> </ul>	

	<ul style="list-style-type: none"> <li>• Participating in meetings with facility personnel for discussion and sharing of best practice on PPHC programs.</li> <li>• Conducting quarterly one-to-one sessions with personnel.</li> <li>• Participating in meetings with facility managers in the district.</li> <li>• Facilitating the development, capacity and sustainability of the health committees.</li> <li>• Conducting meetings with NGO's, CBO's, and MDHS with regard to PPHC programs at facility level.</li> <li>• Communication and giving feedback to community forums on progress of strategic objectives at facility level and on policies and procedures relating to Personal Primary Health Care.</li> <li>• Updating Sub-district manager / program manager on issues relevant to facility.</li> <li>• Investigating and acting upon complaints from the public at facility level and refer when necessary according to policy.</li> <li>• Conducting presentations on Primary Health Care programs to city, national and international visitors as delegated.</li> <li>• Maintaining good relationships with CHC's and hospitals.</li> <li>• Developing social capital through local accountability and community participation with NGO's, CBO's and Health Committees (e.g. Community IMCI).</li> </ul> <p>To ensure that staff members are informed of health policy, procedure and community issues that are relevant to their work and that external stakeholders are informed of the health status of the geographical area in the sub-district so as to involve them in targeted interventions with regard to Personal Primary Health Care.</p>	
4.	<p><b>MONITORING AND EVALUATION / QUALITY ASSURANCE</b>  Monitor and evaluate personal primary health care services by:</p> <ul style="list-style-type: none"> <li>• Developing, implementing and sustaining quality assurance and health promotion projects at community and facility level.</li> <li>• Performing audits/reviews and on the job staff evaluations.</li> <li>• Giving feedback to staff/program manager and sub-district manager on results of audits conducted.</li> <li>• Reporting and taking corrective action to remedy non-adherence to policy and procedure.</li> <li>• Rescheduling personnel to ensure effective service delivery.</li> <li>• Ensuring that health information data is collected, collated and validated at facility level.</li> <li>• Utilising health information in order to evaluate performance at facility level in line with strategic objectives.</li> <li>• Ensuring efficient and effective utilisation of human and material resources.</li> <li>• Organising client satisfaction surveys, evaluating and implementing recommendations facility level.</li> <li>• Complying with health and safety regulations according to policy and legislation.</li> <li>• Developing and implementing a risk plan for the facility.</li> <li>• Implementing and developing a disaster management plan.</li> </ul> <p>To measure the effectiveness and efficiency of service delivery in order to</p>	

	achieve a quality Personal Primary Health Care service to the community.	
5	<p><b>FINANCIAL MANAGEMENT</b></p> <p>Assist in controlling and managing the allocated budget of the cost centres by:</p> <ul style="list-style-type: none"> <li>• Monitoring over and under expenditure of the facility budget.</li> <li>• Ensuring the efficient and effective usage of resources and assets in the clinic by adhering to policy.</li> <li>• Identifying capital and operational projects at facility level (e.g. extensions to clinics).</li> <li>• Identifying and recommending the purchase of equipment.</li> <li>• Ensuring the effective use of fixed and movable assets.</li> <li>• Reporting and completing loss control claims in events such as burglaries and damage to council property (e.g. vehicles and assets).</li> <li>• Safeguarding and securing council's fixed and moveable items at facility level.</li> <li>• Verifying that invoiced items and goods received are correct and submit for payment.</li> <li>• Managing of assets (e.g. condemning items, transfer of assets).</li> <li>• Ensuring that the building is well maintained to comply with health and safety standards.</li> <li>• Participating in the development of pro-active maintenance plan in the sub-district.</li> </ul> <p>In order to comply with the Municipal Financial Management Act and to ensure that the budget allocated to the cost centre is utilised effectively and efficiently.</p>	



## Appendix 3. Job description of the facility managers in MDHS

This is relevant to section 4.9.4.



### JOB DESCRIPTION

#### A. JOB INFORMATION SUMMARY

<b>Name and Surname</b>	
<b>Job title of post</b>	Facility Manager
<b>Minimum qualification required</b>	Relevant Tertiary qualification. Appropriate experience in Management.
<b>Motivation for minimum qualification required</b>	Incumbent must be a specialist with regards to management that would require performing multi-skilled complex tasks on management level.
<b>Current qualification of incumbent</b>	
<b>Job title of incumbent</b>	
<b>CORE</b>	Nursing Management and support Personnel.
<b>Salary level</b>	11
<b>Salary level of incumbent</b>	
<b>Date of appointment/promotion into post</b>	
<b>Date of promotion into current rank</b>	
<b>Institution</b>	Metro District Health Services
<b>Component</b>	Community Health Centre
<b>Reports to</b>	PHC Manager: Sub Structure Office
<b>Organogram</b>	<pre> graph BT     FM[Facility Manager - 24 hour facility.] --&gt; PHC[PHC Manager]             </pre>

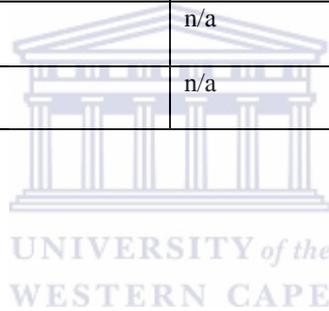
## B. JOB PURPOSE

*Describe in short the purpose of the job. No more than two sentences. The description of the purpose should include such key words as who, where, why, what and how*

Incumbent is primarily responsible for the effective management of the component with regards to Primary Health Care; Human Resource Management; Financial Management; Supply Chain & logistics Management to ensure that holistic care is provided to patients and their families.

## C. POST DIMENSIONS

• <b>Personnel expenses</b>	<i>Applicable to salary level 9 and higher. Minimum rand value in R10 000, R100 000 or R1 000 000</i>
<b>Budget</b>	n/a
<b>Equipment</b>	n/a
<b>Buildings</b>	n/a
• <b>Livestock</b>	n/a
<b>Clients</b>	n/a



• **D. DESCRIPTION OF JOB**

<b>KRA</b>	<b>OUTPUT</b>	<b>ACTIVITIES</b>	<b>WEIGHT OF OUTPUT</b>	<b>STANDARD</b>	<b>EVIDENCE</b>	<b>COMPETENCY</b>
<i>The final product or main objective to of a job achieved against one or more outputs without which results cannot be achieved</i>	<i>Describe the sub results in order to achieve the KRA. Limit the outputs to as few as possible</i>	<i>Describe the activities in order to achieve the output</i>	<i>Indicate the weight of each output. All outputs together should not weigh more than a total of 100%</i>	<i>Describe legislation, protocols, policy, directives, minimum requirements, set parameters and rules that govern or define the output. Describe the criteria according to which the output must conform</i>	<i>Describe how you would prove that the output has been achieved. What would exist because it has been achieved. The evidence must be tangible</i>	<i>Describe the knowledge, skill and behaviour necessary in order to achieve the output</i>
D.1  District Health Services Development	D.1.1  Fully functional Health committees at each CHC.	1. Regular meetings and minutes.  2. Each CHC manager attends workshop to establish basic norms, codes, etc Number of CHCs Management teams informed regarding legislation and National Health Act	5%	<ul style="list-style-type: none"> <li>• Public Service Act,1994 (as amended)</li> <li>• Public Service Regulations</li> <li>• National Health Act &amp; legislation.</li> <li>• Departmental and internal Policies</li> <li>• Circulars, agreements and</li> </ul>	<ul style="list-style-type: none"> <li>• Minutes received and filed at each CHC</li> <li>• Designated staff member represents CHC at all meetings</li> <li>• Number of CHCs Management teams informed regarding legislation and</li> </ul>	<u>Knowledge:</u> <ul style="list-style-type: none"> <li>• Responsible for the management of material and human resources within the financial framework of nursing units.</li> <li>• Implementation of quality improvement programmes in nursing units.</li> <li>• Planning &amp; organizing ( how to plan activities</li> </ul>

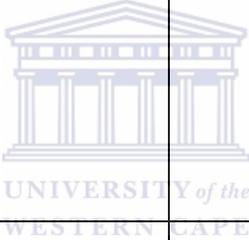
		<p>3. Committee Members to attend training programs.</p>	 UNIVERSITY of the WESTERN CAPE	<p>instructions.</p> <ul style="list-style-type: none"> <li>• Public Finance Management Act.</li> <li>• BAS</li> <li>• Financial Delegations / Instructions.</li> </ul>	<p>National Health Act</p> <p>% committees trained in:</p> <ul style="list-style-type: none"> <li>• proposal writing</li> <li>• basic accounting practice</li> <li>• conduct of meetings, office bearers</li> </ul>	<p>which may include projects, policy matters and compilation of management reports.</p> <ul style="list-style-type: none"> <li>• Training- assist in developing &amp; presenting formal training courses to build capacity of public service.</li> <li>• Occupational Health &amp; Safety Act.</li> </ul> <p><u>Skills:</u></p> <ul style="list-style-type: none"> <li>• Management</li> <li>• Discipline</li> <li>• Analytical</li> <li>• Presentation</li> <li>• Team building/ motivation</li> <li>• Project management</li> <li>• Research</li> </ul> <p><u>Behaviour:</u></p>
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						<ul style="list-style-type: none"> <li>• Professional</li> <li>• Meticulous</li> <li>• Organized</li> <li>• Innovative</li> </ul>
D.2 Human resource Management	D.2.1 1. Fully staffed CHC. All funded posts filled at all times as per FPMI  2. Staff training needs met against SDP  3. Harmonious LR. Good LR Management. All disciplinary and grievance matters resolved  4. SPMS in place, functioning and completed.	1. Recruitment and selection processes  2. Skills Plan developed and implemented  3. Codes of labour relations management adhered to. Application of Disciplinary Code and Procedure.  4.1 IPDPs for all staff	30%	<ul style="list-style-type: none"> <li>• Dept.of Health: Recruitment &amp; Selection Policy, 2002</li> <li>• Public Service Regulations, 2001</li> <li>• Skills Development Act</li> <li>• Labour Relations Act</li> <li>• Individual SPMS Plan 2007/8. Dept.of Health Establishment, 2000</li> </ul>	1. No vacant posts  2. Report on staff trained.  4. No outstanding disciplinary processes or grievances. Proportion of disciplinary concluded and grievances resolved.  4. SPMS cycle	<u>Knowledge of:</u> <ul style="list-style-type: none"> <li>• HR Matters (HR Management practices, legal issues, negotiations, dealing with conflict. Assist in career planning and utilization of personnel..</li> <li>• Performance Appraisal</li> </ul> <u>Skills:</u> <ul style="list-style-type: none"> <li>• Management</li> <li>• Analytical</li> <li>• Team building</li> </ul> <u>Behaviour:</u> <ul style="list-style-type: none"> <li>• Professional</li> <li>• Meticulous</li> </ul>

	<p>5. Absenteeism reduced</p> <p>6. Verified establishment</p>	<p>members signed off</p> <p>4.2 At least 2 Quarterly Reviews completed</p> <p>4.3 Annual appraisal completed</p> <p>5. Register with leave tracking system</p> <p>6. Establishment checked monthly</p>			<p>completed.</p> <p>5. Leave Charts for all staff.</p>	<ul style="list-style-type: none"> <li>Organized</li> <li>Innovative</li> </ul>
<p>D.3</p> <p>Financial Management</p>	<p>D.3.1</p> <p>1. Balanced budget with expenditure controls in place</p> <p>2. Revenue targets met</p> <p>3. Compliance with financial prescripts</p>	<p>1. Monthly expenditure reports evaluated and corrective action taken. Expenditure control systems implemented. Check stock and finances before ordering</p>	<p>15%</p>	<ul style="list-style-type: none"> <li>Public Finance Management Act</li> <li>National Treasury Instructions</li> <li>BAS</li> <li>Financial Delegations / instructions.</li> </ul>	<p>1. Monthly expenditure reports and variance</p> <p>2. Revenue reports</p> <p>3. A-G and inspection reports</p>	<p><u>Knowledge of:</u></p> <ul style="list-style-type: none"> <li>Finance ( Financial regulations &amp; instructions must be followed during the normal course of work.)</li> <li>How to execute overall control of budgets of projects and component to limit financial losses.</li> </ul>

	4. Financial Efficiency	<p>2. Monitoring of fee collection</p> <p>3. Corrective steps from Auditor General and financial inspections</p> <p>4. Monitor monthly cost per visit</p>			4. Cost per visit	<p><u>Skills:</u></p> <ul style="list-style-type: none"> <li>Analytical</li> <li>Discipline</li> <li>Computer literate</li> </ul> <p><u>Behaviour:</u></p> <ul style="list-style-type: none"> <li>Meticulous</li> </ul>
D.4. Supply Chain Management & Logistics	<p>1. All essential supplies at all times</p> <p>2. Asset management system in place</p> <p>3. All essential</p>	<p>1. Storekeeping, stock taking, regular and frequent ordering</p> <p>2. Asset register implemented and stock taking done</p>	25%	<ul style="list-style-type: none"> <li>Public Finance Act</li> <li>National Treasury Regulations</li> <li>BAS</li> <li>Procurement Delegations</li> </ul>	<p>1. Stock reports of essential items</p> <p>2. Asset register audited</p>	(same as above)



	<p>equipment present and working</p> <p>4. GG vehicles well managed</p>	<p>3. Audit of essential equipment list, procurement and servicing of equipment</p> <p>4.1 Log sheets properly completed and controlled</p> <p>4.2 Trips properly authorized</p> <p>4.3 Vehicles serviced regularly</p>			<p>3. Audit report</p>	
<p>D.5</p> <p>Health Information</p>	<p>D.5.1</p> <p>1. Accurate and valid information</p> <p>2. Timeous information</p> <p>3. PHCIS managed and used optimally</p>	<p>1. Monthly RMR checked and signed off before submission</p> <p>2. RMR submission on due date</p> <p>3. Strict supervision of</p>			<p>1. Signed RMR reports</p> <p>2. Reports from Health Information section on submission rates</p> <p>3. PHCIS Duplication Rate</p>	

		data entry into PHCIS. Reengineer reception and filing systems			duced from baseline	
D.6 Quality of care	D.6.1 <ul style="list-style-type: none"> <li>Batho Pele</li> <li>Occupation Health and Safety. CHCs are clean and safe.</li> <li>Monthly M&amp;M meetings</li> </ul>	<ul style="list-style-type: none"> <li>Training of staff</li> <li>OHS reps appointed and trained. Infection control in place. Monthly inspections.</li> <li>Meetings with Mortality and Morbidity reports.</li> </ul>		<ul style="list-style-type: none"> <li>Batho Pele Handbook</li> <li>Occupational Health &amp; Safety Act no.181 of 1993</li> </ul>	<ul style="list-style-type: none"> <li>% of Staff trained</li> <li>% CHCs with monthly inspections</li> <li>% CHCs with reports on file</li> </ul>	<u>Knowledge of:</u> <ul style="list-style-type: none"> <li>Batho Pele Handbook</li> <li>OHS Act</li> </ul> <u>Skills:</u> <ul style="list-style-type: none"> <li>Team building / motivation</li> <li>Presentation</li> <li>Excellent verbal &amp; written communication skills.</li> </ul> <u>Behaviour:</u> <ul style="list-style-type: none"> <li>Meticulous</li> <li>Organized.</li> </ul>
D.7 TB	D.7.1 Increased rates of TB Case detection	TB Sputum Register implemented		Departmental and Internal Policy  TB control Programme-	Proportion of total headcount tested.  Sputum Positivity Rate.  Sputum +ve patients	Expert <u>knowledge</u> of Primary Health Care & tertiary qualification in Nursing Sciences.  <u>Skills:</u>

				2003	started on treatment.	Providing & obtaining information requiring complex explanations. Conduct research  <u>Behaviour:</u> <ul style="list-style-type: none"> <li>• Professional</li> <li>• confidentiality</li> </ul>
D.8 HIV / AIDS	D.8.1 <ul style="list-style-type: none"> <li>• Improved VCT Uptake</li> <li>• STI partner treatment rate.</li> <li>• Female condom distribution from primary distribution sites.</li> <li>• Male condom distribution rate from public sector health facilities(per male 15 years and older)</li> <li>• To improve access</li> </ul>	Supervise Lay counselors  Commence ART Services	 UNIVERSITY OF THE WESTERN CAPE	Departmental & Internal Policies  Transversal Framework HIV /AIDS & STIs.	Counseling rate  Cumulative number of clients on ART at Cross Roads, Nyanga, Heideveld and Browns Farm CHCs	(same as above)

	to ART					
D.9 Womens and Child Health	D.9.1 <ul style="list-style-type: none"> <li>National cervical cancer screening policy implemented.</li> <li>Comprehensive Management of Rape Survivors</li> <li>IMCI Trained Nursing Staff</li> <li>Diarrhoeal Disease controlled</li> <li>Improve School Health</li> </ul>	<ul style="list-style-type: none"> <li>Cervical Cancer Screening Register Implemented, Staff trained, equipment available, client recruitment system in place.</li> <li>Register in place</li> </ul> <p>Monthly report produced.</p> <ul style="list-style-type: none"> <li>IMCI Training</li> <li>ORT Corners at each CHC</li> <li>Manage and supervise School Health Teams</li> </ul>	 <p>UNIVERSITY of the WESTERN CAPE</p>	Public Health Programme.	<ul style="list-style-type: none"> <li>Monthly reports on targets reached and ECC component</li> <li>% Of sexual assault cases reporting to health facilities who received a full course of PEP</li> <li>Proportion of nurses trained</li> <li>ORT corner in place</li> <li>Implement phase 1 of School Health Policy.</li> </ul>	(same as above)
D.10 Improved	D.10.1 <ul style="list-style-type: none"> <li>Chronic Care Team</li> </ul>	<ul style="list-style-type: none"> <li>Identification of</li> </ul>		Public Health	<ul style="list-style-type: none"> <li>Audit report and improved plan</li> </ul>	

<p>Chronic Disease Management</p>	<p>with Clinical audit in place</p> <ul style="list-style-type: none"> <li>• Clubs/Therapeutic Groups/Support groups</li> <li>• Improved management of CVS disorders</li> <li>• Improved foot care and eye screening in diabetics.</li> </ul>	<p>team with at least one audit cycle completed for CVS disease and asthma</p> <ul style="list-style-type: none"> <li>• Implementation of Clubs and groups.</li> <li>• Ensure minimum norms &amp; standards of chronic disease Management in place. (for Diabetes &amp; Asthma)</li> <li>• Implementation of Foot screening record.</li> <li>• Implementation of retinol screening, by camera if possible.</li> <li>• Training in foot screening and retinal examination.</li> </ul>		<p>Programme.</p>	<p>implemented.</p> <ul style="list-style-type: none"> <li>• Patient support system in place</li> <li>• % diabetics screened.</li> <li>• Staff trained</li> </ul>	<p>(same as above)</p>
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	<ul style="list-style-type: none"> <li>Improved wound care</li> <li>An effective alternate dispensing system</li> </ul>	<ul style="list-style-type: none"> <li>Training in guidelines</li> <li>Introduction of structured record</li> <li>Implement CDU System</li> </ul>			<ul style="list-style-type: none"> <li>Wound Care Guidelines implemented, with structured records and audit care.</li> <li>Number of prescriptions issued for chronic medication through Provincial CDU supply system</li> </ul>	
D.11	D.11.1					( same as above)
Improve Mental Health Services	To provide adequate number of MH nurses at facilities	Active recruitment and selection of MH Nurses		Departmental & Internal Policies	% of MH nurses appointed against CSP norms per sub-district	

## E. INHERENT REQUIREMENTS OF THE JOB

*The inherent requirement of the job is derived from the essential functions of the job. The incumbent must be able to perform these essential functions. For example, the 24-hour service provided in a hospital environment will require that the individual work shifts in order to meet operational requirements. The inherent requirement of the job is therefore, that the incumbent is able to work shifts. Similar examples relate to: working hours, standby, willingness to travel and a drivers license.*

*Other examples of inherent requirements could relate to the physical attributes of the incumbent. These can be linked to section 6(2) of the EEA, 1998, which states that the employer may fairly discriminate against the incumbent if such a physical attribute is regarded as an inherent requirement of the job. These include: race, gender, sex, pregnancy, marital status, family responsibility, ethnic or social origin, colour, sexual orientation, age, disability, religion, HIV/AIDS status, conscience, belief, political opinion, culture, language and birth.*

Registration as a Professional Nurse with 10-15 years experience

Course in Hospital / financial management advantageous.

Good interpersonal & communication skills

Conflict Management skills

Effective administration of resources

Leadership abilities and decision- making skills

Good organizational skills



## • F. MEDICAL TESTING

*In cases where specific health or physical attributes are essential for the performance of the job, the Minister of Labour must be approached for the necessary exemption. If exemption is obtained, such requirements should clearly be stated in the job description and advertised as such.*

*Health requirements should relate to the inherent requirement of the job. No pre employment testing (health questionnaire, medical testing, medical reports etc) should be undertaken should the inherent requirement of the job not require health/physical attributes.*

n/a

## G. CAREER PATHING

*Describe the necessary knowledge, skills and behaviour in order to progress with regard to career pathing (career advancement). This may be horizontal (lateral transfer) or vertical movement (promotion). This should include in service training as well as formal education.*

*Promotion to the next higher post is subject to availability of a post, satisfactory work performance as well as conforming to the applicable recruitment and selection procedures.*

Promotion to next higher post is that of Deputy Director depending on the availability of funded vacant post. Knowledge and skills comparable to that normally obtained through formal studies towards obtaining an applicable degree / diploma. Incumbent should have extensive experience in management and perform multi skilled tasks and complex work on management level that require frequent interpretation of information in the absence of an established framework.

## H. AGREEMENT

• <b>Agreement</b>	This job description has been consulted and agreed to between the relevant parties.	
• <b>Employee</b>	<i>Signature</i>	<i>Date</i>
<b>Direct supervisor/manager</b>	<i>Signature</i>	<i>Date</i>
<b>Higher level supervisor</b>	<i>Signature</i>	<i>Date</i>

## Appendix 4. Participant information sheet and consent form for co-researchers

This is relevant to section 4.10.



**UNIVERSITY OF THE WESTERN CAPE**  
**School of Public Health**



Private Bag X17 • **BELLVILLE** • 7535 • South Africa  
Tel: 021- 959 2809, Fax: 021- 959 2872

### **PARTICIPANT INFORMATION SHEET**

**A health system perspective on factors influencing the use of health information  
for decision-making in a district health system**

Dear

I am Vera Scott, a staff member and student at the University of the Western Cape. I am engaged in research to understand how facility managers use formal and informal information in decision-making.

#### **Why am I doing this?**

I am registered for a Doctorate in Public Health in the School of Public Health (SOPH), University of the Western Cape. This research will form my doctoral thesis. I am accountable to my supervisors, Professor Uta Lehmann ([ulehmann@uwc.ac.za](mailto:ulehmann@uwc.ac.za), tel: +27-21-9592633, fax: +27 21 959 2872) and Professor Helen Schneider ([hschneider@uwc.ac.za](mailto:hschneider@uwc.ac.za); +27-21-9593563) whom you are welcome to contact should you have any questions, concerns or complaints.

#### **Who are the participants?**

The participants are facility and sub district managers in Mitchells Plain who are willing to engage in a reflective learning process investigating how information is used in decision-making.

**What is expected from the participants in the study?**

Participants will be observed in decision-making processes in facilities and in sub district meetings, interviewed regarding how information in decision-making and what factors influence this process, and asked to engage in one or two reflective group learning sessions. Each interview and reflective session will last approximately 60 - 90 minutes. The reflective learning sessions will be structured to review and generate findings and interpretations. You are expected to respect the confidentiality of others in the research process and treat peers with respect and dignity.

**What can participants expect?**

Participants can expect to be involved as co-researchers in decisions and processes regarding ethics, selection of priority decision-making processes, development of research activities, review of findings and interpretation of findings. I will seek to maximise the benefit of the research process for the participating managers, especially in terms of developing reflective learning skills. Once the research project is completed, feedback will be provided to all participants in the form of summarised and detailed reports. Participants will be treated with respect and dignity, anonymity will be discussed, your contribution to the research will be valued and you will be acknowledged in the dissemination of findings, as appropriate and negotiated with you.

**Can you withdraw from the study?**

Certainly, you may withdraw from the study at anytime, without having to give a reason. You are free to ask questions at any point during the research process. You do not have to talk about anything you do not want to, and you may exit from the research at any time. The study is voluntary and if you refuse to participate this will not influence your employment in any way.

**Any further questions?**

Are there any questions about what I have just explained? Please feel free to contact me on +27 21 788 6240 or Fax: +27 21 959 2872 or by email at [verascott@mweb.co.za](mailto:verascott@mweb.co.za). If you are willing to participate in the study, please read and sign the consent form below.

**Consent Form**

**A health system perspective on factors influencing the use of health information  
for decision-making in a district health system**

**Participant’s agreement**

I have been informed about the purpose of the study, and what my participation involves. I also understand that I can withdraw from the study at any time, without having to give a reason and that the study is voluntary. I also understand that confidentiality will be maintained, that I have a duty to respect the confidentiality of my peers and that the findings of the study will be used for research purposes and service development.

**Researcher’s agreement**

I shall respect you as a co-researcher and involve you in decisions regarding ethics, selection of decision-making processes to be studied, research activities, interpretation of findings and presentation and dissemination of findings. I will keep all the information collected during the research confidential and use a pseudonym of your choice in all documents. I undertake to share skills and knowledge and learn with you in a mutually-supportive learning environment. The contents of this research will be used for my doctoral thesis, and will be published in peer review journals. You will also have access to the findings and, with prior negotiation and together with other participants, will be supported in presenting findings in learning for a within the health service. Any change from this agreement will be renegotiated with you.

Participant’s Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher’s Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix 5. National policy and guidelines on planning

This is relevant to section 5.2 and 5.3.

**Table A.2. National policy and guidelines on planning**

<b>NATIONAL GOVERNMENT</b>
<p><b>The Public Finance Management Act (PMFA) of 1999</b> Requires the Director- General of each government department to develop and table a strategic plan with a 5 year horizon, and annual performance plans which include a forward projection of 2 years. In its amendment the Director-General is required to develop systems for performance monitoring and evaluation. This includes identifying a core set of indicators to monitor performance, adopting a quarterly reporting system and aligning reporting between Strategic Plans, Annual Performance Plans, budget documents and annual and quarterly reports. It requires Director-Generals to produce Annual Reports and financial statements at the end of each financial year, and stipulates that the department is audited in relation to its performance against predetermined objectives.</p>
<p><b>Public Audit Act of 2004</b> Empowers Auditor-General of South Africa (AGSA) to <i>audit and report on the accounts, financial statements and financial management</i> of all national and provincial state departments and administrations; all constitutional institutions, as well as the administration of Parliament. Empowers the AGSA to conduct an audit of <i>performance information</i> and must reflect at least an opinion or conclusion on the reported information relating to the performance of the auditee against predetermined objectives.</p>
<p><b>Framework for Strategic Plans and Annual Performance Plans (Treasury, 2010)</b> Links to the Government-wide Monitoring and Evaluation System, with a specific focus on monitoring outcomes Emphasises use of performance information Does not prescribe how to develop Strategic Plans and Annual Performance Plans but provides guidance on good practice Strategic plans are 5-year plans linked to the term of office of government, while APPs are 3-year plans linked to the budget cycle of government, the Medium-Term Expenditure Framework (MTEF) and Medium-Term Strategic Framework (MTSF) and Performance Agreements between Ministers and the President</p>
<p><b>The Medium Term Strategic Framework (MTSF)</b> Sets out the government’s priorities, programmes and policies at the beginning of each term of office; is approved by Cabinet</p>
<p><b>The Medium Term Expenditure Framework (MTEF)</b> <b>Sets fiscal objectives over the 3 year MTEF period</b> Provides for a process that must be followed in seeking Cabinet approval for budgets for the year ahead and indicative allocations for the outer years of the 2013 MTEF period Specifies outputs that will be achieved over the MTEF period Recognises performance information as a critical factor in successful programme budgeting that requires continuous refinement</p>
<p><b>National Health Act (NHA) of 2003</b> Requires the Director-General to develop strategic, medium term health and human resources plans annually in line with national health policy Requires the Director-General to “identify national health goals and priorities and monitor the progress</p>

of their implementation”

Stipulates that the national health plans must form the basis of the annual budget.

Requires the Director-General to integrate the national and provincial health plans annually

**NATIONAL DEPARTMENT OF HEALTH**

**Framework for the Development and Quarterly Monitoring of the Annual Performance Plans (APPs) and the Operational Plans of the National Department of Health (National Department of Health, 2012a)**

Links to PMFA and Health Act

its performance against predetermined objectives



## Appendix 6. National policy and guidelines for monitoring and evaluation, and quality assurance

This is relevant to section 5.2 and 5.3.

**Table A.3. National policy and guidelines for monitoring and evaluation, and quality assurance**

<b>MONITORING AND EVALUATION</b>
<p><b>Policy Framework for the Government-Wide Monitoring and Evaluation System (GWMES), Cabinet (2005)</b></p> <p>Describes three “data terrains” which underpin the monitoring and evaluation system, namely: programme performance information; social, economic and demographic statistics; and evaluation</p>
<p><b>Framework for Managing Programme Performance Information, Treasury (2007)</b></p> <p>Linked to the GWMES</p> <p>Promotes an outcome-based approach and result-based management</p> <p>Describes the use of performance information in policy development, strategic and operational planning, budgeting, implementation management and monitoring. Identifies the need for performance information across the logic chain of inputs-processes-outputs-outcomes-impacts.</p>
<p><b>South African Statistics Quality Assessment Framework, Statistics South Africa (2008)</b></p> <p>Linked to the GWMES</p>
<p><b>National Evaluation Policy, Presidency (DPME) 2011</b></p> <p>Linked to the GWMES</p> <p>Provides a government-wide approach to evaluation and seeks to use evaluation to improve accountability regarding spending and impact by linking evaluation to planning and budgeting processes and to improve policy and programme performance through increasing knowledge about what works and what does not with regards to a public policy, plan, programme, or project.</p>
<p><b>Guide to the outcomes approach, Presidency (DPME) 2010</b></p> <p>Describes the outcome based approach on which the Policy Framework for the Government-Wide Monitoring and Evaluation System is premised</p> <p>Focused on using outcomes to inform what inputs, processes and outputs are required and should be prioritised</p> <p>Describes how the MTSF is used to develop Negotiated Service Delivery Agreements and converted into high level outputs and key activities</p>
<b>QUALITY ASSURANCE</b>
<p><b>National Core Standards for Health Establishments, National Department of Health 2011</b></p> <p>Provides guidance on how the Office of Standards Compliance contributes to quality improve and the use of both routine DHIS based information and non-routine information.</p>

## Appendix 7. Accountability reports of the three spheres of government

This is relevant to section 5.2.

**Table A.4. Accountability reports of the three spheres of government**

<b>Accountability cycle</b>	<b>Accountability documents</b>	<b>Performance information</b>
<b>National and provincial departments and public entities</b>		
Policy development	<ul style="list-style-type: none"> <li>• Policy documents</li> <li>• Explanatory memoranda accompanying bills</li> </ul>	<ul style="list-style-type: none"> <li>• Identify baseline information informing policy</li> <li>• Set out desired effect of policy</li> </ul>
Strategic planning	<ul style="list-style-type: none"> <li>• Strategic plans</li> <li>• Corporate plans</li> </ul>	<ul style="list-style-type: none"> <li>• Indicate outputs to be produced</li> <li>• Specify performance indicators</li> </ul>
Operational planning and budgeting	<ul style="list-style-type: none"> <li>• Operational plans</li> <li>• Budgets</li> <li>• Performance agreements</li> </ul>	<ul style="list-style-type: none"> <li>• Set performance targets</li> <li>• Indicate available resources</li> <li>• Allocate responsibilities</li> </ul>
Implementation and in-year reporting	<ul style="list-style-type: none"> <li>• Monthly budget reports</li> <li>• Quarterly performance reports</li> </ul>	<ul style="list-style-type: none"> <li>• Report progress with implementation of plans and budgets</li> </ul>
End-year reporting	<ul style="list-style-type: none"> <li>• Annual reports</li> </ul>	<ul style="list-style-type: none"> <li>• Report on performance against plans and budgets</li> </ul>
<b>Municipalities and municipal entities</b>		
Policy development	<ul style="list-style-type: none"> <li>• Policy documents</li> <li>• Explanatory memoranda accompanying ordinances</li> </ul>	<ul style="list-style-type: none"> <li>• Identify baseline information informing policy</li> <li>• Set out desired effects of policy</li> </ul>
Strategic planning	<ul style="list-style-type: none"> <li>• Integrated development plans</li> </ul>	<ul style="list-style-type: none"> <li>• Indicate outputs to be produced</li> <li>• Specify performance indicators</li> </ul>
Operational planning and budgeting	<ul style="list-style-type: none"> <li>• Municipal budgets</li> <li>• Service delivery and budget implementation plan</li> <li>• Performance agreements</li> </ul>	<ul style="list-style-type: none"> <li>• Set performance targets</li> <li>• Indicate available resources</li> <li>• Allocate responsibilities</li> </ul>
Implementation and in-year reporting	<ul style="list-style-type: none"> <li>• Monthly budget statements</li> <li>• Mid-year budget and performance assessments</li> </ul>	<ul style="list-style-type: none"> <li>• Report progress with implementation of plans and budgets</li> </ul>
End-year reporting	<ul style="list-style-type: none"> <li>• Annual reports</li> </ul>	<ul style="list-style-type: none"> <li>• Report on performance against plans and budgets</li> </ul>

Source: Framework for Managing Programme Performance Information (Treasury 2007)

## Appendix 8. Types of informal and knowledge, and their source, used in key decisions in each case

This is relevant to section 9.2.2.

**Table A.5. Types of informal and knowledge, and their source, used in key decisions in each case**

Case	Key decisions	Example of information/ knowledge used	Source	Type of information/ knowledge
Efficiency of Service Delivery	Is the anticipated workload too much for the staff on duty today?	Workload norms and how to use them	Discussion in management meeting Experience	Know-how
		Current client intake	Appointment system Observations	Know-about
		Anticipated further intake attuned to weekly and diurnal variation	Experience	Know-when
		Know how to motivate and support staff on busy days	Experience	Know-about Know-why Know-when
	Should the deferment policy be implemented now?	Deferment policy content and intention	Policy document Discussion of policy at management meetings	Know-about
		Staff and client preferences and anticipated behaviour	Experience	Know-about Know-when

How should the deferment policy be implemented?	Deferment policy content and intention	Policy document Discussion of policy at management meetings	Know-about
	Programmes which have to be prioritised and protected	PDR Discussion at management meetings	Formal information Know-about
	How to balance priorities	Experience	Know-how
	Best timing	Experience	Know-how and know-when
Is intake and flow efficient?	Congestion at particular service points	Observations Reports from staff	Know-about
	Long waiting times	Complaints from clients	
	Waiting and service times Patterns of client arrival and staffing	Waiting time survey	Formal information - quantitative
How can intake and flow be improved	How the procedures and processes work		Know-how
	How steps in processes impact on each other		Know-why
	What weekly and diurnal variation to expect in intake and flow		Know-when
Are certain staff members not adequately productive?	Queues move slowly at some service points Other staff complain	Observations Interactions with staff	Informal information
	Work load indicators	RHIS	Formal information - quantitative
How to improve workload productivity?	Knowledge of weaknesses in skills and application	Counselling	Know-about Know- why

	How best to allocate work to maximise efficiency and quality?	<p>Knowledge of the particular staff on duty and how they work under stress:</p> <ul style="list-style-type: none"> <li>• their competence</li> <li>• their resilience</li> <li>• how they have coped before under similar circumstances</li> <li>• what staff want from their manager in order to give of their best when they are under pressure</li> </ul>	Experience	Know-about Know-when
Programmes	Is programme coverage adequate or improving?	Immunisation rate	District RHIS (RMR)	Formal information - quantitative
		Cervical smear coverage rate	District RHIS (programme register)	
	Is programme quality adequate or improving?	Smear positive cure rate (an outcome indicator suggesting quality)	RHIS (programme register)	Formal information - quantitative
		% HIV clients screened for TB (a process indicator)	Audits	
		Fridge temperature correct: Yes/No Bin cards correct and up-to-date Yes/No % Road to health card correct	Quality management tools	
		Assessment and treatment records in clients folder	Morbidity and mortality reviews	
	Is the routine data complete and of good quality?	Number of IUCDs inserted (RHIS) Number of IUCDs booked and done as indicated in appointment book	RHIS and parallel data collection and collation systems	Formal information - quantitative
	How can programme coverage be improved?	Staff, HOD and facility managers' perceptions of why family planning uptake is uptake is low in teenagers	Interaction with staff and HODs	Know-why
		Whether staff are following protocols and agreed strategies to increase coverage	Observations	Know-about

		Staff, HOD and facility managers' experience of which strategies have been more successful and thinking around why	Experience and reflection	Know-why Know-when
	How can programme quality be improved?	Further skill development needed by the clinician	Interaction with staff and HODs	Know-about Know-why
		Checks and supports that can be put into place	Observations	Know-about Know-why
	How can the routine data be corrected?	Who is doing what wrong in what process	Interaction with staff and HODs Observations	Know-about Know-why
How to combine the strengths of the team under different conditions (service delivery demands and configurations of staff on duty)		Experience	Know-how and know-when	
<b>Planned and unplanned leave</b>	Whether to give permission for unplanned leave	Personal information offered by staff member explaining why they need unplanned leave	Interaction with staff member	Know-about
			Z1 application form	
	Whether to categorise leave request as paid or unpaid	Whether permission was granted for unplanned leave	Interaction with line manager	Know-about
		Whether sufficient leave entitlements in that category remain for the leave cycle	HRIS Back to work interview Staff leave profile form	Formal information
		How to check that leave entitlements are up-to-date in HRIS	Experience	Know-how
	Whether individual leave usage suggests excessive use or abuse	Personal information about staff member's health and family circumstances	Interactions with staff member	Know-about
		Patterns of leave usage	Leave profile form	Formal information
How to interpret patterns of leave pattern usage		Experience Sharing experience in a discussion	Know-how	
How to manage individual staff	Personal information about staff member and their behaviour	Back-to-work notes	Formal information	

members effectively to reduce unplanned leave	under particular conditions	Counselling and disciplinary notes	
Whether there is excessive use of unplanned leave at facility or department level	Unplanned leave per department or facility	HRIS	Formal information
How to manage individual staff members effectively to reduce unplanned leave	How to conduct counselling in a supportive and corrective way What practices are acceptable in organisational culture	Experience	Know-how
		Experience	Know-about
How to manage the collective staff to reduce unplanned leave	How to work within or how to challenge the organisational culture and practices	Experience	Know-how
Leave scheduling	Previous leave history of staff Personal circumstances of staff	Staff meeting Informal discussions in response to individuals filling in the leave schedule form	Local know-about
	How to be fair in scheduling	Experience	Know-how
Whether to recommend (City) or authorise (MDHS) leave	Service requirements	Experience	Know-about
	Other leave anticipated (training, vacation or likely to be sick)	Training schedule Annual vacation schedule	Formal information
		Interactions with staff and HODs	Know-about
	Personal circumstances of staff	Interactions with staff and HODs	Know-about
Developing contingency plans (MDHS only)	State of staff morale and how it will be affected	Observation Interactions with staff and HODs	Know-about Know-why
	Reasons for leave not being well managed	Experience of how the system operates Interactions with staff and HODs	Know-why

		How to work around the sub structure stipulations while ensuring adequate oversight at facility level	HOD meeting Discussion with sub structure	Know-how
Planning staff training on the Workplace skills plan		Staff members' personal development goals and their course requests,	Interview – may be documented	Know-about
		Service priorities and needs	Policy PDR	Formal information
		Skill gaps in the facility to meet needs	Workplace skills audit	Formal information
		Number of days study leave available	Policy HRIS	Formal information
Whether to release staff to attend unplanned training		Service requirements	Experience	Know-about
		Other leave anticipated (training, vacation or likely to be sick)	Training schedule Annual vacation schedule	Formal information
			Interactions with staff and HODs	Know-about

