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Oboirien, Kafayat (2019) 0 District-based Clinical Specialist Teams’ Implementation in South Africa:lessons from analyses of institutional role and functioning in a transforming health system, University of the Witwatersrand, Johannesburg, <http://hdl.handle.net/10539/29709>

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District-based Clinical Specialist Teams' Implementation in South Africa: Lessons from analyses of institutional role and functioning in a transforming health system.

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Thesis submitted for the degree of Doctor of Philosophy

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Date: November 04, 2019

Candidate declaration

I, KAFAYAT OLABIMPE OBOIRIEN, declare in accordance with Rule G27 that this thesis is my original work. It is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. This work has not been published for any examination at the University of the Witwatersrand or any other university.

Signature: _____  _____

Date: ____04 -11-2019_____

Dedication

To all cancer survivors and those who have lost the battle to cancer, their families, friends and their pillars of support.

&

In loving memory of my dear late brother - Isiaq Olaniyi Jabbar

May Allah grant you paradise Firdaus Amin.

[Nov. 1980 - June 2019]

Acknowledgements

All praises, glorifications and thanks are due to Almighty Allah, the Lord of the world, the giver of life and bestower of hope and strength. To Him belongs the knowledge of His creation and the inspiration to "read" and to seek for knowledge. "Read in the name of your Lord" ***(Quran 96 vs 1)***

My deepest and most profound appreciation and thanks to:

- My supervisors: Prof Jane Goudge, Dr Bronwyn Harris and Prof John Eyles for their unconditional support, guidance, patience and compassion as I wander through the pile of knowledge and evidence that led to this story. Beyond this PhD, they are a source of inspiration.
- Professor Matthew Chersich who encouraged me to take a short term (NRF) internship programme at the Centre for Health policy which, led to this meritorious PhD journey and story.
- All the research participants who shared their reflections and experiences through the UNITAS project: (Universal health coverage in Tanzania and South Africa: monitoring and evaluating progress).
- The UNITAS project team members in South Africa: at the Health Economics Unit, University of Cape Town, Prof Di McInytre, Prof Lucy Gilson, Prof Maylene Shung-King, Ms Marsha Orgill, Dr Ayako Honda, At the Africa Centre for Health and Population Studies, University of KwaZulu Natal, Prof Till Barnighausen, Dr Natsayi Chimbidi, Ms Janet Michel and Mr Thubelihle . And Dr Fillip Meheus, Dr Wezile Chita, Mr Ermin Erasmus, Ms Lwazi Sikuza. Thanks for your intellectual inspiration and encouragement

and for contributing to the data collection process that enhanced the mapping of this story. The UNITAS team members in Tanzania,

- The CHP family, including Dr Nonhlanhla Nxumalo, Dr Prudence Ditlopo, Dr Daune Blaauw, Dr Adams Fusheini, Dr Witness Mpanga, Dr Thando Fana, Ms Ling Ting, Professor Letitia Rispel, and Professor Lenore Manderson. I appreciate your passage chats, hugs, smiles and words of encouragement.
- My support team beyond this PhD: Dr Bronwyn Harris, Prof Sharon Fonn, Prof Latifat Ibisomi, Dr Shakira Choonara, Ms Shehnaz Munshi, Ms Faith Mambulu, Dr Olukemi Babalola, Dr Ejemai Eboreime, Dr Pascalia Muyewande. You all stood by me and shared your invaluable thoughts and time with me when I needed them most.
- My co-PhD fellows: Teurai Rwafa, Nyasha Mazibuko, Hlologelo Malatji, Edna Bosire, Janine White, Pinky Mahlangu, Siphiwe Thwala.
- Ms Jackie Rouessler, Ms Ann Luusah, Mr Nigel Ndekwere, Mr Ronnie Nemangwele, Mrs Bahihah Muhammad and Ms Glenrine Flowers for the administrative support you provided during fieldwork and other research dissemination activities.
- The School of Public Health (SoPH) PhD programme and the entire SoPH family, particularly, Professor Kathleen Kahn, Dr Jude Igumbor and Mr Paul Bohloko for your guidance and encouragement in meeting the PhD programme's milestones.
- My committee of friends: Prof and Mrs Adeleke, Drs Funmi and Abduljelil Adebesin, Prof and Mrs Raji, Dr and Mrs Adewuyi, Mr and Prof Ibisomi, Prof and Dr Pedro, Mr and Dr Akinosho, Mr and Mrs Busari, Dr and Mrs Abdullahi, Dr and Mrs Salisu, Mr and Mrs Rabiu, Dr and Mrs Thomas, Prof and Mrs Aregbesola, Drs Ogunronbi, Mr and Mrs Idowu, Mr and Mrs Reddy.

- My parents Mr and Mrs Jabbar, siblings - Anifowose Tawakaltu, Suraj Jabbar, Isiaq Jabbar, Taiwo Musari and Kehinde Jabbbar. And in-laws Mr and Mrs Oboirien, Mr and Mrs Abdussalam, Mr Saliu and Dr Halimat Amedu-Oboirien, Dr Isa and Khadijat Oboirien.
- My husband, Prof Bilainu Oboirien and my adorable children Abdulrahman, Abulmalik and Aisha Oboirien. Thanks for your encouragement and being there to support me during my highs and lows, you are my pillar of strength.

This study is part of the UNITAS project and was carried out through the funding from the European Union's Seventh Framework Programme (FP7-CP-SICA, grant agreement number 261349). It was also partly funded by the National Research Foundation through the Innovations doctoral award (Grant UID 95048), the SARCHi programme in Health Systems and Policy at the Centre for Health policy. Also, many thanks to the Faculty of Health sciences (University of the Witwatersrand) for providing the Individual research grant (Grant Number: 0012548511201512110500000000000000004206). Lastly, a special thanks to the Centre for Health policy for funding the writing process and for housing this work including all the tangible and intangible resources that led to this story.

Finally, I acknowledge that the views expressed in this thesis are solely mine and are not influenced in any way by the funders or the support I have received.

Abstract

Rationale

Clinical governance is a growing approach or strategy for improving the quality of health care in many health systems, especially those seeking universal health coverage (UHC). This is partly because UHC promotes access to quality health care while minimising the financial and geographical inequities associated with access to health care. South Africa introduced new actors at the local health care delivery level in 2011 – District based Clinical Specialist Teams (DCSTs) to implement clinical governance and improve the quality of care in a system with high maternal and child health morbidity and mortality. The use of multiple organisational level strategies such as risk management, continuous professional development, workforce planning and clinical audits etc. – (i.e. clinical governance) is not new in ensuring quality and holding clinical professionals accountable for the services they provide within the health care system. Yet, DCSTs are new to the district health system (DHS)'s organisational structure and their role is new within an evolving South African quality policy environment.

As of early 2019, DCSTs are operational in 49 out of the country's 52 health districts, as part of a complex decentralising district health system (DHS). Limited decision-making authority, poorly-defined actor roles and inadequate capacity at the district level have generally been obstacles to transferring responsibility down to lower levels in South Africa. Yet, little is known about how DCSTs activities are implemented in practice and whether their institutional role and functioning affect change.

Aim and methods

This doctoral research examines the institutional role and functioning of DCSTs within the context of a decentralising DHS in South Africa between 2013 and 2015. This was achieved through applying a theory of change approach to programme evaluation complemented by a case study design. The study is relevant to how we can understand the dynamics of implementation by constructing and examining the assumptions and processes that drive change.

The PhD is nested in an evaluation project, Universal Coverage in Tanzania and South Africa: Monitoring and evaluating progress (UNITAS project) in three health districts. The UNITAS project contributed to the understanding of bottlenecks and unintended consequences in the implementation of a range policy reforms towards UHC. This PhD took forward the UNITAS research focused on DCSTs being one of the reforms seeking to move South Africa towards UHC.

Findings

There has been a fairly successful recruitment of DCSTs nationally given a 94% rollout. While, activities of teams are fairly similar and informed by emerging national priorities and specific district level processes. However, there are variations in the three study sites by team composition, geographical coverage, as well as number of facilities in each district or those covered by the DCSTs. In addition, differences in institutional settings and organisational arrangements are contextual factors that provided opportunity to draw on existing structures, networks and infrastructure for quality improvement.

Further, the understanding and expectations of DCSTs' role differ by individuals, levels within the DHS (district or sub-district level) and service delivery levels (Hospital vs PHC). This partly led to perceptions of role conflict and a slow adjustment to DCSTs in the three study sites.

Yet, despite the observed constrained context, role conflict and adjustments, DCSTs were able to function and lead change while revealing and bridging gaps in maternal and child health service delivery as well as holding health care professionals to account. This was possible through their ability to emerge as institutional entrepreneurs (IEs) by using social and political skills to harness opportunities, leverage resources and strategically (partly) enable change. Further team members have been able to take on certain institutional entrepreneurship characteristics, functioning – more or less – as announcers of reforms, articulating a strategic vision and direction for the system, advocating for change, mobilising resources. In addition, they have helped to reorganise services and shape care practices by re-framing issues and exerting power to influence organisational change. While DCST innovation can foster institutional entrepreneurship, there are nuanced differences between individual members and the team, and these need better understanding to maximise this contribution to change.

Conclusions

South Africa continues to strive towards instituting a quality improvement policy and system partly through clinical governance. A number of programmes, actors and processes compliments this approach. The introduction of DCSTs to lead the South African clinical governance implementation at a district level through the PHC approach is central to achieving UHC, although learnings are just starting to emerge. Given the understandings, perceptions and experiences of DCSTs in South Africa, with its uniqueness and complexities, providing the enabling environment where institutional entrepreneurship can strive is important for sustaining the DCST innovation.

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List of Abbreviations

CQI	Continuous Quality Improvement
DCST	District-based Clinical Specialist Teams
DHS	District Health System
HIV	Human Immune Virus
LMICs	Low and middle-income countries
MDGs	Millennium Development Goals
NDoH	National Department of Health
NHI	National Health Insurance
PDSA	Plan-Do-Study-Act
PDoH	Provincial Department of Health
PHC	Primary Health Care
SDGs	Sustainable Development Goals
ToC	Theory of Change
TQM	Total Quality Management
UHC	Universal Health Coverage
UK	United Kingdom
UNITAS	Universal Health Coverage in Tanzania and South Africa: Monitoring and evaluating progress
WHO	World Health Organisation

–

Glossary

Actors – are individuals who develop, influence or adopt health policy processes. For example, middle managers, health care workers, patients and citizens (Gilson 2012)

Clinical governance – is an approach that helps "move health care delivery from an organisational magic bullet of single strategies or elements" (e.g. professional education, clinical audit or risk management) to a systematic combination of range of strategies to ensure safety and improve quality (Phillips et al 2010)

Decentralisation - Decentralisation involves the transfer of decision-making responsibility for administration and management from the national to sub-national level of government, entities or autonomous agencies (Mills A; 2002)

Decentralising – seen as a spectrum of transfer of decision-making responsibility, that is ongoing given that systems at the lower level may not get absolute decision-making power.

District health system – is the lowest layer within the (South African) national health system and has a geographical and management component.

Dyad – a pair of doctor and nurse specialist in one discipline. E.g. family physician and PHC nurse

Health system strengthening – Within the field of health policy and systems research, health systems strengthening involves actions and strategies that influence the behaviour of health system actors to promote change in the structures or the building blocks of the health system (Gilson 2012).

Innovation - the introduction of new ideas, practices or roles – innovations (Davida T, 2005; (IRISS), 2012)

Institutions - are established rules, norms, values and practices that serve as a basis for determining the appropriate level of action (Griefs 2006)

Institutional entrepreneurship – enables and sustains change in an organisation, it describes the role of actors and how they are able to shape norms and change practices by navigating structures and systems as well as leveraging resources within an organisation (Tracey et al 2011; Dorado 2005)

Quality – is a standard achieved when resources are organised in the most effective way to meet the health needs of those most in need, for prevention and care, safely, without waste and within higher level requirements" (WHO 2008).

Quality improvement – process, activities or observable changes in an organisation that help to meet the predetermined set standards of an organisation or service (Whitarkeri S, 2011)

Role – a form of responsibility assigned to or assumed by an individual, which becomes a pattern of social and working life (Biddle BJ 1986).

Role differentiation - when we classify given category of individuals with given tasks either by their job descriptions, qualification, or position in an organisation (Turner 1979/80)

Role expectation - what others in the organisation think an individual is responsible for and how the individual should carry out those responsibilities (Biddle BJ 1986).

Role behaviour - what an individual actually does in carrying out his/her job. (Biddle BJ 1986).

Role ambiguity – is a condition in which expectations or knowledge are insufficient or incomplete to guide behaviour (Biddle BJ 1986).

Role adaptation – is a process through which the shared conception and execution of role performance involves flexible combinations of adopted belief, value, coersion and absence of obvious options (Turner RH 1990)

Theory – 'reason giving' that influence virtually all human endeavour (Davidoff et al 2015)

Theory of change - describes as well as critically assess the processes of reform because it takes into account the changes in the un/intended events in the implementation of programmes through constant engagements and processes of reflections by/and with actors (Vogel I; 2012)

Universal health coverage – a system that ensures all people in a particular population have access to quality, essential health service coverage and financial protection (World Health Organisation, 2015)

Overview and structure of thesis

This thesis is by publication and has two broad parts: an integrating narrative and research papers. The thesis has eight chapters. Chapters 1- 4 and 8 presents the integrating narrative, while chapters 5-7 presents the research papers of the study. I outline the chapters below:

Chapter 1 situates the DCSTs within clinical governance literature as a quality improvement strategy and policy context. Further, it describes the role of clinical governance in promoting change and methods used for quality improvement processes that are useful for implementing clinical governance. In addition, it presents the current knowledge gap on clinical governance implementation in LMICs. Then, I outline the South African's clinical governance environment and how the DCSTs fit into the UHC policy context. It concludes by presenting the study rationale and the study aim and objectives.

Chapter 2 presents DCST as a reform by outlining the ideal team – its composition, position in the district health system and in decentralisation. It also reviews the literature on teams (work), a dimension in the DCST innovation and its potential influence in understanding DCSTs' functioning at the DHS level. The chapter concludes with the research question – what lessons can be learnt about the institutional role and functioning of DCSTs within the context of a decentralising district health system in South Africa?

Chapter 3 outlines the theoretical approach and conceptual framework for the study. This chapter unpacks the research question through a complex adaptive systems used in complexity theory. It further draws on other complementary theories such as role theory and institutional entrepreneurship literature (in institutional theory discourse) as in-depth lenses for understanding

institutional role and functioning respectively. The chapter concludes with a conceptual framework.

Chapter 4 presents the methods used for the study. It reviews the literature on evaluation of health care reforms, draws on the theory of change as an evaluation approach and describes how the theory of change was adapted for this study. It then presents a case study design for the study. Further, it presents the study setting, sampling approach, structure and timing of data collection and data management analysis. It concludes with the ethical considerations for the study.

Chapters 5-7 present papers 1-3 by an in-depth consideration of the DCSTs, their role and function and their reception at a district/sub-district level of the health system. Paper 1 examined 'who' and 'what' DCST is across three study sites and how they are perceived and received at district level. Paper 2 assessed DCSTs clinical governance role within an existing quality improvement environment by interrogating the concept of 'role' as a dimension in DCSTs' implementation. This was assessed by interrogating concepts such as role differentiation and role adaptation. Paper 3 presents an in-depth analysis of the functioning of a DCST given their clinical governance activities. It presents an overview of change by drawing on secondary data to assess changes in some key maternal and child health indicators (before DCSTs were introduced in 2010/2011 till 2015). It further assessed these activities through an institutional entrepreneurship lens by drawing on institutional entrepreneurship concepts such as announcers of reforms, articulating a strategic vision and direction, advocating for change. In addition, providing multi-level support, facilitating platforms that promote the retention of knowledge and exerting influence and power.

Chapter 8 presents the discussions by drawing out some of the high-level lessons from the research papers (chapters 5-7) through a synthesis of the in-depth consideration of the DCSTs, their institutional role and functioning at the DHS level. In particular, it highlights the readiness of the

DHS in hosting the DCST innovation, the need to attend to actors, relationships and processes in policy reforms towards UHC and the importance of understanding the difference between the practiced pathway of change and the theory of change. Further, it highlights some of the limitations of the study.

Chapter 9 concludes the thesis with recommendations.

CHAPTER 1 : IMPROVING QUALITY IN HEALTH CARE SYSTEMS

1.1. CLINICAL GOVERNANCE: AN INTRODUCTION

Health systems in many countries are under pressure to improve access to quality health care, especially those seeking universal health coverage (UHC) [1-3]. Health systems upholding UHC goals strive to and ensure that access to needed health services is available to all individuals irrespective of socio-economic status or geographic characteristics [4, 5]. However, as access to needed health services expands, health systems may find difficulty in improving or sustaining quality health care [6]. One reason is that as multiple professionals provide health care to diverse populations in often complex and bureaucratic settings there is potential to delay access, cause error or harm, yet able to avert error or deaths [7].

Quality improvement involves systematic data-driven activities designed to bring about immediate or sustained positive change in the delivery of health care [8]. Literature on quality improvement is large and growing due partly to the varying approaches and strategies, adopted in different contexts [9]. Clinical governance is one of the organisational-level strategies for quality improvement in health care [10]. Chandra Vanu Som (2004) cites the main principles of clinical governance based on the United Kingdom (UK)'s National Health Service to involve:

- Clear lines of responsibility and accountability for the overall quality of clinical care
- A comprehensive programme of quality improvement systems such as clinical audits, applying and supporting evidence-based practice, implementing clinical standards, protocols and guidelines, health workforce planning and development
- Developing and updating education and training plans
- Clear policies aimed at risk management and,

- Integrated procedures for all professional groups to manage and resolve poor performance [11].

According to Allen (2000), clinical governance provides the overarching structure within which health systems and those who work in them garner support and are held accountable for the safety and continuous quality improvement of their service [12]. Thus, through clinical leadership, health care inputs, structures and processes are integrated to ensure the delivery of safe and quality health care [11].

However, the scope of clinical governance and its definition remain debatable and evolving across settings [13]. Since the early 1980s, the World Health Organization (WHO) emphasised the idea of ensuring governance of clinical care [14, 15]. Clinical governance began as a construct or concept to promote "a quest for quality improvement" [11, 16] and has evolved as a framework [11] and approach or strategy for improving quality [17, 18]. As such, its overall goal is to promote awareness and responsibility for safety and quality in health care service delivery but also requires that those responsible actively implement its elements and are accountable for its outcomes. These elements are further explored in detail in chapter 7 - paper 3).

In this thesis, I adopt a working definition of clinical governance based on Phillips et al. (2010) - as an approach that helps "move health care delivery from an organisational magic bullet of single strategies or elements" (e.g. professional education, clinical audit, workforce planning or risk management) to a systematic combination of range of strategies to ensure safety and improve quality [18]. This is because it provides a systems' lens for operationalising quality improvement while acknowledging the clinical governance principles and elements highlighted above [7, 11, 13, 19].

Nonetheless, clinical governance involves instituting a system where individuals, teams and/or organisations are accountable for clinical care [10, 13]. Accountability seeks to specify account-giving behaviour and is becoming an important factor in achieving UHC [2, 20]. It asks to whom are clinical professionals responsible and what they are responsible or answerable for? [13]. Instituting a system of accountability may complicate the process of change as clinical governance is sometimes characterised as promoting a blame culture [1, 10, 21]. Braithwaite and Travaglia (2008) suggests that there is difficulty in instituting accountability in health care because of the complexities involved in healthcare delivery and the diffusion of responsibilities [13]. They illustrate that, clinical professionals are accountable for the quality of care they provide to patients. At the same time, they have responsibilities to their respective professional boards or organisations. While the executive boards of health facilities often want to hold clinical professionals and managers accountable for the exercise of work performance, human resource management and professional conduct, yet when making decisions such as those related to staff shortage for example, it is difficult to judge the extent of accountability. Further, executive boards are constrained in holding clinical professionals to account either because of the high levels of expertise many clinicians hold and exercise or the need to promote professional autonomy [13].

Campbell and Sweeney (2002) draw attention to the contribution of clinical governance to accountability. They emphasize three overlapping factors, including:

(i) The architects of clinical governance and the context under which it is being implemented (the environment of change)

(ii) The people responsible for implementing clinical governance (leaders of change) and,

(iii) The people who will make clinical governance as part of their daily routine (implementers and users of change).

For instance, these overlapping factors rely on a multi-level approach to change at an individual (e.g. general practitioner), the group or team (e.g. primary care team), the organisation (e.g. primary care organisations/trusts) and overall system (i.e. National Health Service - NHS). Further, authors suggest the need to recognise the independence of each level in their roles and responsibilities, ensuring leadership, ensuring teamwork and learning, ensuring resources at different levels, providing support and motivating performance. There is also a need to acknowledge the interdependence of the levels in these areas in order to achieve improved quality of care [10].

In assessing the different approaches that can help achieve quality and lead change; a number of quality improvement models are available in the literature, which complements clinical governance implementation. A systematic narrative review of quality improvement models in health care identified five organisational-level change-promoting approaches, which apply to different sectors including healthcare. These include: (i) Total Quality Management (TQM) or Continuous Quality Improvement (CQI), (ii) Business Process Reengineering (iii) Rapid Cycle Change (iv) Lean thinking (v) Six Sigma [9]. CQI model promotes incremental changes, through leadership and management of project teams. It integrates ongoing activities using specific tools such as Plan-Do-Study-Act (PDSA) [22] in order to avoid mistakes before they happen [23, 24]. In addition, it promotes the collection of measurable indicators in order to identify the underlying causes of poor performance [9]. Business Process Engineering emphasises a radical clean break approach to organisational change by examining and redesigning processes [25]. Rapid Cycle Change is promoted by the US' Institute for Healthcare Improvement. The Rapid Cycle Change approach asks, about which health care problem is being addressed, how to determine whether change is an improvement and the changes that can be made that will result in improvement [26].

This approach also uses the Plan-Do-Study-Act (PDSA) cycles repeatedly through small-scale tests of change based on reflections of those at the frontline of health care delivery [9, 22, 26]. Lean thinking was reportedly developed by Toyota Motors in the 1950s for streamlining processes [27, 28]. This is to ensure client satisfaction with minimal waste of effort, time and costs. The approach can involve a range of tools but particularly involves a series of five steps that enable workforce teams to look at their work environment to identify the obstacles in current processes and then use 'value stream mapping' to remove any unnecessary steps in work process, thus reducing waste [9, 27, 28]. Lastly Six Sigma was introduced in industry in the 1980s and in the healthcare sector in the 2000s [9]. Six Sigma uses an approach that involves (Define Measure Analyse Improve Control – DMAIC) and statistical tools to identify variations in a process and distinguish between observable cause and chance [29, 30].

These quality improvement models share complementary and overlapping approaches useful for instituting clinical governance. For instance CQI complements clinical governance implementation in different settings. For example, literally CQI is a core component for articulating clinical governance goal in the United Kingdom since 1997 [11], in Australia [7] and recently in South Africa in 2014 [31].

Further, other models such as Radical Change Cycle, Business Process Reengineering and Lean thinking uses leadership and management involvement to promote change. These models also try to identify and keep what is working and removing what is not (Business Process Reengineering model); identifying processes that provide value with minimal wasted time, cost and efforts (Lean thinking); or eliminating defects through intensive technical training and coaching (Six Sigma) [9]. While all approaches are data driven and require some investment in information management systems and data analyses. These approaches are useful and contributes to understanding the

robustness and complexity of a clinical governance approach in practice. Further these models suggests options available to those implementing clinical governance, but further review of these models are outside the scope of this review.

1.1.1. Clinical governance in low and middle-income countries (LMICs).

Clinical governance approach and literature are limited in many LMICs. Chandra Vanu Som, (2004) cites the WHO reports 1985 [32] and 2000 [14], as the earliest documents that set out the use of the term 'clinical governance'. The UK's National Health Service was the first to pass clinical governance into legislation in 1997 [11, 33], but the use of the term and approach has grown in many high income countries such as the United States of America, Canada, New Zealand, Australia and other European Union member states [34]. However, in many LMICs, clinical governance as a strategy for quality improvement is just developing. In addition, there is limited documentation of clinical governance policy or implementation in many LMICs including South Africa. This limited documentation of clinical governance in LMICs may be partly due to the low resource-base of many LMICs to invest in research dissemination in terms of publication of work. This can be influenced by the way quality improvement programmes are somehow based on how donors in high-income countries conceptualise funded programmes. However, these dynamics needs to be explored further based on existing evidence of clinical governance literature in LMICs and this is beyond the scope of this thesis.

1.1.1.1. Clinical governance: South Africa's Policy context

South Africa articulated a policy on quality in health care in 2001 [35, 36], which was later revised in 2007 [35, 36]. It expresses a system-wide approach to quality improvement and identifies external and internal role players in quality improvement.

"To achieve necessary improvements, a national policy on quality in health care is needed, together with commitment from all stakeholders, beginning with leadership from the highest levels of government, the national health system, labour, and the health care professionals" [37]

By this, the national policy on quality in health care notes that all actors within the health system must be accountable for quality in health care [37]. At the local service delivery level, (i.e. the district health system (DHS) level), health professionals will be responsible for implementing the national standards for quality. In addition, the national policy on quality requires a quality assurance culture and approach to the delivery of health care at all levels. Especially at the local service delivery level, competent health care professionals should be available to assure continuous quality improvement. The national health system aims to achieve this through continuous training and professional development of health care workers [37]. As at 2007, the national policy for quality in health care recommends that each district health team should nominate at least one person, to be responsible for quality assurance and continuous quality improvement in health districts. This person(s) will be accountable to the district head [38]. Further details on the national policy on quality is explored (in chapter 6 - paper 2).

Efforts to formally ensure accountability for quality at the district level came to being in 2011, through the introduction of District-based Clinical Specialist Teams (DCSTs) at a local service delivery level. DCSTs are tasked to provide supportive supervision and clinical governance at the district level. Further, this DCST innovation aims to address the maternal and child health burdens as well as the poor quality of health care [39, 40] through its governance role. DCSTs are expected

to integrate existing actors and processes in improving quality of care and effecting change [31]. Yet, there is little evidence of the implementation process and effect on change in practice.

An ideal DCST comprise three specialist dyads (a nurse and doctor) in: (a) family medicine (b) paediatrics and (c) obstetrics and gynaecology and a doctor specialist in anaesthetics (Figure 1-1). These new teams, are largely oriented around maternal and child health services, and ideally comprise seven members, a Family physician, PHC nurse, Obstetrician/Gynaecologist, Advanced midwife, Paediatrician, Paediatric nurse and Anaesthetist [40].

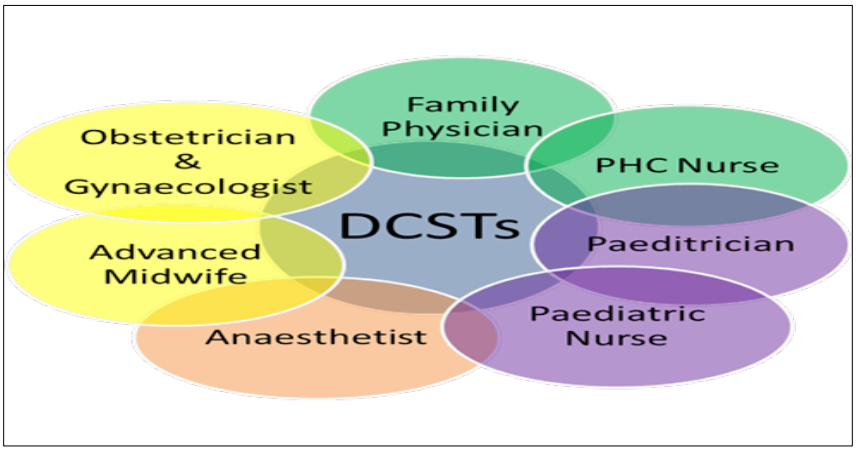

Figure 1-1: Ideal DCST composition

1.1.2. The South African Health System: Improving quality

Poor quality of health care services is one of the structural challenges facing the South African health system [41, 42]. Burden of disease creates additional challenges that manifests for example, in high maternal and child health mortality and a burden of chronic illnesses [42]. The Rural Health Fact sheet 2013, reports Coovadia et al. (2009) [43] while outlining the health burden South Africa faces:

> *"South Africa is one of 12 countries in which mortality rates for children have increased since the baseline for the MDGs in 1990, most from preventable and treatable causes and*

with no measurable progress. South Africa will fall well short of achieving the MDGs for reducing maternal and child health mortality because of the poor implementation of existing packages of care. However, providing full coverage of key packages of interventions such as treatment and prevention of HIV infection and provision of comprehensive maternal and neonatal care would put South Africa on track to achieve better health outcomes. In addition, to achieve high coverage of priority care for mothers, neonates, and children is financially feasible and requires a 2·4% increase in expenditure, but this money must be spent strategically. More so, interventions will require strengthening leadership, accountability mechanisms, and implementing high quality of care interventions".

South Africa struggled to reduce maternal and child health mortality and to meet the Millennium Development Goals (MDGs) for maternal and child health outcomes in 2015 (Table 1-1) [44]. As these goals are still pertinent in the sustainable development goals (SDGs) [45], the need to promote good health and wellbeing especially for children and women health is still on the agenda of the national health system [45].

Table 1-1: South Africa's progress towards the MDGs for maternal and child health

Maternal and child health indicators	***National indicators (2014)**	**MDG goal by 2015**
Infant mortality rate (deaths under 1 year per 1000 live births	23.6 per 1000 live births	18 per 1000 live births
Under 5 mortality rate (deaths under 5 years per 1000 live births)	34.3 per 1000 live births	20 per 1000 live births
Maternal mortality ratio	141 per 100 000 live births	38 per 100 000 live births
Source: Millennium Development Goals Report 2015, Statistics South Africa. *According to Statistics South Africa, period counts as at 2014 or nearest year 2015.		

As at 2012/13, the rural health advocacy project reports that between a quarter and half of maternal, neonatal, and child deaths (based on national audits) have an avoidable health-system factor [46]. Further, Alkema et al. (2016) reports on the global, regional and national level trends in maternal mortality between 1990 and 2015 and categorises South Africa as one of the countries in which the chance that MMR decreased is less than 90% or the point estimate of the country-specific decline is less than 25% [47]. While notwithstanding the variations in reporting on MMR data, South Africa's maternal health indicators are poor when compared to other countries in Sub-Saharan Africa (such as Rwanda, Tanzania, Zambia and Uganda) with lower health expenditure on health but with higher improvements in maternal health outcomes between 1990 and 2015 [47].

1.1.1.2. Articulating UHC partly through the PHC reengineering reform

The national health insurance (NHI) system is aiming to address some of these challenges by putting in place some quality of health care interventions and increasing public sector health care expenditure. NHI serves as the overall reform to respond to many of the country's health system challenges and intends to achieve UHC for all South Africans [41]. Yet, NHI is leading to much debate and has received mixed reaction within the political space and private health care sector since its announcement in 2010 and introduction in 2011. For example, in a recent letter to the South African President, public health systems academics highlight the need to pay careful attention to the process of change through the NHI. In addition, to ensure that the NHI addresses governance and does not lead to further inequities in the health system [48]. The South African NHI system is planned over a fourteen-year period and in three phases [41].

The first phase of the NHI - primary health care (PHC) reengineering reform took place (technically) over a period of five years (between 2011 and 2016) [39]. It involves strengthening the service delivery platforms, improving timely access of health care services to promote health

and prevent disease and the overall improvement of quality in the public health sector [39]. There have also been numerous initiatives to improve management and governance of health facilities at PHC level. For example strengthening district health management teams is expected to further strengthen the structure, powers, delegations and accountability in public health sector services at the DHS level [41].

1.1.1.3. Context of a PHC approach through the DHS

The South African health system has three levels and each one plays a crucial role in the delivery of health care to the population. Through a decision-making sharing arrangement, there is:

- the national department of health (NDoH) responsible for the overall policy formulation of the country's health system and support for provinces,
- the provincial department of health (PDoH) is responsible for policy implementation and management within a provincial geographical area, while
- the DHS is responsible for local-level health care service delivery [49, 50].

These levels have complementary and overlapping boundaries of control on health care service delivery processes. For example in the implementation of the NHI system, the national level issue guidelines on implementation. These guidelines complement the existing annual strategic medium-term health and human resource plans for provinces and health districts. Through these guidelines the NDoH is exercising its powers and the performance of its duties [49]. The PDoH is also responsible for similar functions within its provincial authority and determines the periods, guidelines and format for the preparation of health plans for health districts [49]. The PDoH also contributes to the performance targets for health care services at the DHS level. With support from the PDoH, each DHS is liable to implement a service level agreement by providing health care

services through resources made available by the NDoH and performance standards used to monitor service delivery.

Since 1994, the DHS has been a core component of the national health system's strategy to ensure a decentralised and unified health care system. In addition, it continues to be the institutional vehicle for the delivery of PHC and district hospital-level services [49]. Wolvaardt et al. (2014) defines the DHS based on PHC as expressed by the WHO as:

> "a more or less self-contained segment of a national health system. It comprises primarily a well-defined population, living within a clearly delineated administrative and geographical area, whether urban or rural. It includes all organisations and individuals providing health care in the district, whether governmental, social security, nongovernmental, private, or traditional. A DHS therefore consists of a large variety of inter-related elements that contribute to health in homes, schools, work places, and communities, through the health and other related sectors. It includes self-care and all health-care workers and facilities, up to and including the hospital at the first referral level (district hospital in South Africa), and the appropriate laboratory, other diagnostic, and logistic support services" [50, 51]

Yet, achieving a comprehensive PHC strategy through a well-functioning DHS has lagged behind its intended purpose [43, 50, 52]. Wolvaardt et al. (2014), cite the 2008 Development Bank report that highlight the challenges of the DHS and how this has contributed to the struggles of the national health system in achieving good health outcomes [50]. The report reviews the challenges of the South African health system and revealed: (i) a flawed institutional design (ii) problems with governance frameworks, specifically the lack of decentralised power sharing authority to DHS or hospital management level that influence effective functioning of health system goals [53]

(iii) different understandings of the managerial roles and relationships between the three tiers of the healthcare system [54]. For example, there are vertical lines of authority and management at the national and provincial levels which result in uncoordinated policy development, duplication of activities and confusion at the district level. In addition, while role differentiation between provincial and the DHS level are based on strategic functions and operational activities respectively, the role clarification between provincial and national departments are more difficult because of the inability of provincial departments to develop their own plans and policies independently are ill-defined [54]. However, in some instances provincial level contexts is changing this position, given a number of management strengthening and leadership initiatives in place [55].

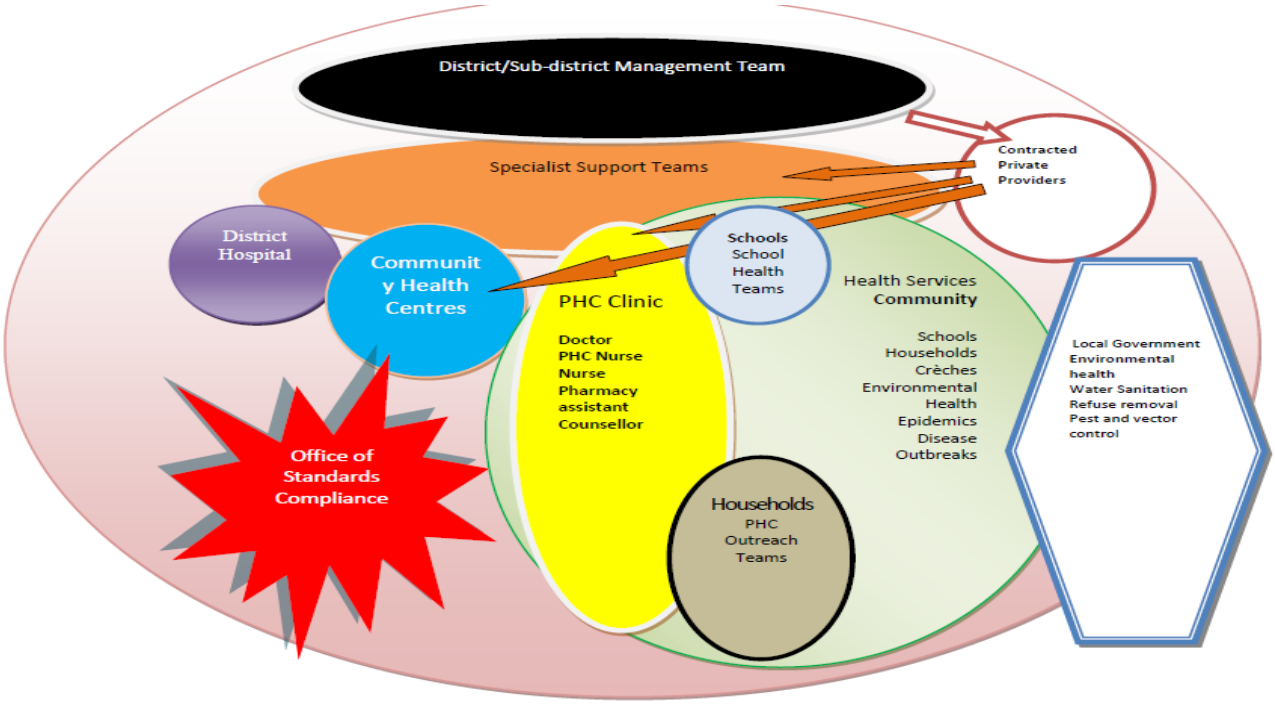

Figure 1-2: PHC reengineering streams within the DHS

Source:http://www.jphcf.co.za/wp-content/uploads/2014/06/GUIDELINES-FOR-THE-MPLEMENTATION-OF-THE-THREE-STREAMS-OF-PHC-4-Sept-2.pdf

In 2011, due to the persistent health system challenges, the need to overhaul the health system through PHC reengineering reforms became eminent [39]. Yet, this overhauling of the system was introduced through a top-down policy approach, which poses questions about the merit of a local bottom-up approach compared to top-down directive intervention [56, 57]. The top-down policy approach also has influence on how relationships will unfold among actors during implementation [56].

PHC reengineering reform includes four streams: (i) Ward-based Primary Health Care Outreach Teams; (ii) Integrated School Health Programme; (iii) Contracting of (non-specialist) general practitioners (GPs); and (iv) the DCSTs [39].

Figure 1-2 shows the proposed interaction between the streams of PHC reengineering, existing structure and environment of the DHS. There are other components of the DHS (existing policies, actors and processes), which needs to interact with the core streams of the PHC reengineering reform, especially the clinical governance role of the DCSTs. This makes the institutional role and functioning of the DCSTs a complex process partly because PHC reengineering relies on a strengthened DHS.

1.1.1.4. Addressing the DHS challenges within the South African UHC era

There are efforts to strengthen the DHS. For example through the increased healthcare funding allocation. The provincial health allocation to DHS has increased overtime to deal partly with the increasing local health care service delivery expenditure (and inflationary effects). For example, between 2005/6 and 2010/11, total PHC expenditure[1] has doubled in real terms from R27 billion

[1] Total PHC expenditure includes what is spent by the provincial department on DHS (covering non-hospital PHC for - district management, community health clinics and centres, community based-services, other community services, HIV/AIDS, coroner services, nutrition and district hospitals) and what is spent by local governments on PHC.

to R45 billion respectively [58]. Further, between 2012/13 to 2015/16 financial year, provincial expenditure on DHS increased from 43.3% to 45.4% of total provincial expenditure (see Table 1-2).

Table 1-2: Provincial expenditure by programme, 2012/13–2015/16 (nominal R million)

R million	2012/13		2013/14		2014/15		2015/16	
	Audited outcome	Percentage of total	Audited outcome	Percentage of total	Audited outcome	Percentage of total	Audited outcome	Percentage of total
Administration	3 653	2.6%	3 910	2.7%	3 760	2.6%	4 308	2.8%
District Health Services	60 521	43.3%	62 810	44.0%	66 676	45.3%	69 788	45.4%
Emergency Medical Services	5 763	4.1%	5 839	4.1%	5 806	3.9%	6 025	3.9%
Provincial Hospital Services	25 712	18.4%	26 693	18.7%	27 888	18.9%	29 628	19.3%
Central Hospital Services	27 694	19.8%	28 272	19.8%	29 433	20.0%	29 513	19.2%
Health Sciences And Training	4 252	3.0%	4 413	3.1%	4 435	3.0%	4 521	2.9%
Health Care Support Services	2 012	1.4%	2 105	1.5%	1 382	0.9%	1 465	1.0%
Health Facilities Management	10 231	7.3%	8 656	6.1%	7 828	5.3%	8 513	5.5%
Total	139 839	100.0%	142 697	100.0%	147 207	100.0%	153 762	100.0%

Source: South African Health Review 2015/16.
[http://www.hst.org.za/publications/District%20Health%20Barometers/District%20Health%20Barometer%202015_16.pdf]

However, at a national level, there is a decline in expenditure on district management (including DCSTs funding, which, contributes to district management expenditure) as a proportion of provincial district health services expenditure (Table 1-3). Yet, there are variations in provincial and health districts' expenditure on district management and PHC services across districts [55, 58]. For instance, in some health districts, expenditure on district management is above national average. This can influence the financial capacity of districts to recruit DCSTs.

Table 1-3: Provincial district services expenditure by sub-programme (nominal R million)

R million	2012/13		2013/14		2014/15		2015/16	
Programme 2: District Health Services	Audited outcome	Percentage of total	Audited outcome	Percentage of total	Audited outcome	Percentage of total	Pre-audited outcome	Percentage of total
District Management	3 416	5.6%	3 391	5.4%	3 395	5.1%	3 492	5.0%
Community Health Clinics	13 064	21.6%	12 852	20.5%	13 348	20.0%	14 107	20.2%
Community Health Centres	6 873	11.4%	7 100	11.3%	7 741	11.6%	7 877	11.3%
Community Based Services	2 339	3.9%	2 238	3.6%	2 602	3.9%	2 812	4.0%
Other Community Services	1 343	2.2%	1 535	2.4%	1 433	2.1%	1 525	2.2%
HIV/AIDS	10 586	17.5%	12 136	19.3%	13 037	19.6%	13 876	19.9%
Nutrition	265	0.4%	202	0.3%	220	0.3%	199	0.3%
Coroner Services	470	0.8%	500	0.8%	513	0.8%	515	0.7%
District Hospitals	22 003	36.4%	22 687	36.1%	24 260	36.4%	25 291	36.2%
Global fund (WC only)	160	0.3%	168	0.3%	128	0.2%	93	0.1%
Total	**60 521**	**100.0%**	**62 810**	**100.0%**	**66 676**	**100.0%**	**69 788**	**100.0%**

Source: South African Health Review 2015/16. [http://www.hst.org.za/publications/District%20Health%20Barometers/District%20Health%20Barometer%202015_16.pdf]

Nonetheless, the successful recruitment of a DCST relies on what is feasible for each DHS. For example, the proposed costing model for the salaries of an ideal DCST amounts to R7 623 723 million annually per district [40]. This proposed salary constitutes 10.9% of the national audited outcome on expenditure for district management in 2012/13 (i.e. if the 49 districts nationally have full complements of DCSTs). This can have similar effect on available district-level health funding for the recruitment of DCST members. Also, capacity of districts to recruit an ideal DCST complement, minimum complement or no DCST will have influence on (perceptions of) desired change [59].

In addition, complementary programmes can influence the perceptions of change in health indicators which form part of DCSTs' performance outcomes for maternal and child health services. For instance, South Africa is investing in sub-programmes such as HIV/AIDS, because it contributes to the high burden of maternal and child health outcomes [60]. Table 1-3 shows that between 2012/13 and 2015/16, district health expenditure on HIV programme has increased from 17.5% to 19.9% respectively. Moodley et al. (2018) also report an expansion of the South African

anti-retroviral programme since 2010 [60], which can influence judgements on maternal and child health indicators. As well as the existing quality improvement role provided by clinic supervisors now known as PHC coordinators who are tasked with overseeing the operational management and assessing quality standards at PHC facilities at the DHS level since 2001 [61, 62] all have mitigating influence on DCST influence on change.

1.2. Rationale of study

A decentralised health system is widely advocated as useful for delivering PHC services and promoting a bottom-up approach to the management and delivery of health care [63, 64]. The introduction of new actors including their roles and practices (into the DHS) suggest a change process [56]. The DHS is largely responsible for hosting the implementation of the DCSTs and the administration and provision of PHC services. Yet, it is unclear how the DCSTs' introduction as new agents in the DHS and their anticipated roles may positively impact on the existing DHS statusquo, the organisational structure and how relationships between the DCSTs and existing actors within the system will(not) promote the required organisational practices for system change? In addition, how DCST can act as agents of change in instituting positive norms and practices within the system to help address the poor maternal and child health (MCH) outcomes and poor quality of care.

This PhD is motivated because the DCST is a new reform in South Africa and unique to this setting. This team comes to the health system amidst multiple and concurrent reforms for improving quality in health care to achieve UHC. Therefore, I explore how the team is understood and experienced by actors within and beyond the DHS. This is necessary because there is little knowledge about how the DCSTs will respond to system challenges in practice in South Africa,

the scope of their functions, how teams will interact (internally and with other actors), and their influence on health system objectives.

In order to better understand the multiplicity of factors that could influence the DCST implementation, theories such as theory of change, role theory and institutional entrepreneurship literature is drawn on. In order to provide an in-depth lens for understanding assumptions of implementation (theory of change), interrogating differences in role (role theory) and profiling functioning of actors through their agency (institutional entrepreneurship).

1.3. Study aim and objectives

The aim of this thesis is to examine the institutional role and functioning of District-based Clinical Specialist Teams within the context of a decentralising DHS in South Africa between September 2013 and November 2015. This PhD study nests itself within the UNITAS project - Universal Health Coverage in Tanzania and South Africa: Monitoring and evaluating progress. The UNITAS' project is a five-year evaluation study (between 2011 and 2016) monitored and evaluated some of the primary health care reengineering related reforms (District management strengthening, contacting of private practitioners, referral system strengthening and the DCSTs) within the South African NHI policy. The broad aim of the UNITAS project was to:

> *Contribute to the understanding of bottlenecks and unintended consequences in the implementation of policy reforms, which aim to support UHC, and by act of monitoring and engaging with system actors; support the process of policy implementation in South Africa and Tanzania. The policy reforms the UNITAS project evaluated in South Africa include: district management strengthening, contracting of private practitioners, strengthening of the referral systems and the district-based clinical specialist teams. The UNITAS project research questions were: How does the experience of policy*

implementation in relation to selected universal health coverage innovations unfold over time, and what key factors influence this experience?

This thesis focuses on and presents one of the UHC innovations selected by the UNITAS project – DCST, being one of the South African PHC reengineering innovations. The objectives of this PhD thesis are:

1. To describe 'who' and 'what ' DCST is across three study sites and how they are perceived and received at district level
2. To examine how actors understand and respond to the new clinical governance role of the DCSTs.
3. To examine in-depth, the institutional-level functioning of DCSTs in one district.
4. To draw out some high-level lessons through a synthesis of an in-depth consideration of the DCSTs, their institutional role and functioning at the DHS level and
5. To provide recommendations for South Africa's clinical governance practice.

CHAPTER 2: DCSTs AS A POLICY REFORM

In South Africa, the introduction of DCSTs came about after the minister of health's visit to Brazil in 2010, in a bid to draw on other health systems' experiences to address current challenges [39]. As at August 2011, when DCST innovation was announced its composition is unique to South Africa. This is partly because evidence of service delivery or quality improvement teams at PHC level in other countries are slightly different, due to: (i) team's composition and (ii) location of teams' role within different health care systems.

Brazil introduced the family health program in 1995 also known as Programa de Saude da Familia - PSF teams. They comprise one family physician, one nurse, two auxiliary nurses and four to six community health agents responsible for a specified catchment area [65]. The aim of the PSF team is to extend access to care by providing services mainly in health promotion and prevention but if necessary provide treatment. This model is based on experiences in Canada and Cuba [65].

In Canada, family health teams comprise: doctors, nurses, nurse practitioners, and other health professionals who work together to coordinate the highest possible quality of health care for patients [66]. In England, primary care groups/trusts were introduced in 1998 to provide clinical governance. Each primary care group include 50 general practitioners covering about 100,000 patients, responsible for resource allocation to general practice and advisory role on hospital and specialist care [17]. In Africa, five countries (Ghana, Mozambique, Rwanda, Tanzania and Zambia) in 2009 introduced varied large scale and long-term health systems' strengthening interventions with PHC or DHS focus [67]. Zambia introduced district-based quality improvement agents, whose responsibility is to promote established networks of grassroots community presence by providing onsite training and mentorship. This includes teams of community health workers, traditional birth attendants and clinic support workers [67].

The above international examples of quality improvement initiatives are all part of efforts to improve access to quality health care and strengthen each health system's PHC delivery and health outcomes. Yet, in terms of composition, there are differences in each country's model and the potential interaction of role players. These unique institutional designs highlight the role of context in the implementation of health system reforms [68], including how different institutional designs have varying influence on desired health outcomes across settings [69, 70].

For example the South African intervention has some similarities with other countries' intervention because of its PHC approach. Yet, recruiting only specialists at a national level for a quality improvement role where other models are feasible is not so clear. Yet not all specialists have capacity in quality improvement at the PHC level making the investment on an orientation and induction programme necessary. However, this investment poses additional cost to the DCST innovation.

As at March 2015 in South Africa, and up until early 2019, DCSTs are in 49 out of 52 health districts [71]. Although their roll out was supposed to be at a national level one of the nine provinces in the country instituted DCST in only one out of its four health districts. These provincial level dynamics in implementation is unclear and has not been documented. Yet, other potential dynamics are anticipated and how this will influence desired change needs further exploration.

2.1. Decentralisation as context for DCST innovation

Decentralisation involves the transfer of decision-making responsibility for administration and management from the national to sub-national level of government, entities or autonomous agencies [63, 64, 72-74]. As a bureaucratic exercise, it can involve the physical distribution of agents or public sector personnel to areas under a government jurisdiction [75-77].

Decentralisation is integral to health sector reforms and it has been around for a long time as part of the PHC approach [77, 78], yet there has been hardly any progress in South Africa at least [43]. Ideally, decentralisation should provide a basis through which decision-making responsibilities are articulated [78, 79] and describe a wide variety of power or decision sharing arrangements which influences human resource management processes within a system experiencing change [78]. Yet, decentralisation as a concept is not an absolute term because it is understood within a spectrum of decision-making sharing arrangements [78, 79]. This introduces power dynamics in decision-making processes [78]. Further, it is context specific and varies in terms of its institutional design [77, 78].

As decentralisation creates a new decision sharing arrangement that influence change in the relationship between actors and navigation between processes [78]. It can manifest in how new roles of actors are defined, what skills are available, the linkages between the levels of the system, and the policy environment that determines how new arrangements will work [79]. For instance, actors within a system tend to adjust to or resist a new organisational structure, depending on the perceived appropriateness of a new institutional arrangement [78]. Also, there may be potential conflict in the implementation of decentralised arrangements due to non-clarity of roles - disputed or poorly communicated [79]. However, decentralisation has potential benefits: it can promote actors working together and are sources of empowerment at different levels within the health system depending on the scope of decision sharing arrangements [78]. However, there may be difficulty in resolving, issues of accountability [77], partly because accountability relies on trust, a phenomenon that often raise emotive and individual value judgements [80, 81]. Further, empowerment, may favour actors differently or the response of the system to newly created decentralised levels may differ, thus influencing the path and pace of change.

In South Africa, the national government and the NDoH determines the appropriate levels of decision-making arrangements between the different tiers of the health system [38] but this is always characterised by power and politics [80]. While the DHS was formally established in the National Health Act of 2003 [38] its development and implementation had been difficult due to reluctance from provincial and national health departments to transfer authority and power to the district level [82]. This is partly due to the limited managerial capacity at the DHS level [43, 50]. However, current health sector reforms such as the NHI system, is redirecting a number of decision-making responsibilities to the district, sub-district and facility level partly through leadership and management strengthening roles [41]. Further, with the introduction of the DCSTs, a new decision-making responsibility (i.e. clinical governance) for quality improvement is created at the DHS level but little has been documented in practice.

2.2. Team (work) in DCST innovation: a model for quality improvement

There is a growing emphasis on forms of working in organisations that will ensure effective use of human resources (amidst shortages) to minimise error and ensure quality in service delivery [83]. Rather than forms of working based on individual leadership, health systems are increasingly adopting a team-based approach for the management, governance and delivery of health care [84, 85]. With organisations hosting different informal work groups as well as teams, there is growing evidence that team (work) is becoming a constitutive element of organisational reforms [86].

A team can be defined as a group of individuals each of whom possesses a particular expertise, responsible for making collective decisions; and together hold a common goal, come together to communicate, collaborate and consolidate knowledge, from which plans are developed, tasks determined and future decisions influenced [87, 88]. As such, key elements characterise a team: (i) individuals who are interdependent in their tasks (ii) share responsibility for outcomes (iii) often

with diverse expertise (iv) have shared vision (by virtue of being embedded in a social entity) and (v) manage their relationships across organisational boundaries [85, 89, 90].

Different configurations of teams may emerge in health care either in the redesign of work groups through managerial interventions or the creation of quality improvement processes or self-management or interdisciplinary workings at an organisational level [90-94]. The emergence of teams in health services has gained prominence. This is partly because of the increasing complexity and fragmentation of health services that require collective strategising or because of the 'local kinds of association' in teams with perceived limited bureaucratic management needed to meet health system goals [86].

Teamwork is a multidimensional construct [90] and complex process [84] through which individuals in teams function and it is influenced by its varying structures and processes, depending on membership, scope of work, roles or tasks and interactions [90]. The nature of team processes is also shaped by their other networks i.e. paths in which actors (individuals, objects and concepts) relate meaningfully to enact collaboration [95]. However, teamwork is perceived to be serving different perspectives and interests, as teamwork can exhibit different rhetorical and persuasive functions within management, health policy and health care practice [85]. The rhetoric of teamwork in management involves cohesion of teams to the interest of management. Yet in health (care) practice, teamwork discourse highlights the negotiations between organisations, teams and individual within them to drive a desired health system goal. Yet, negotiations about how organisations, teams and individuals interact are based on task design for those involved. Further it relies on clear purpose, appropriate culture, specified tasks, distinct roles, suitable leadership, relevant members, adequate resources, self-knowledge, trust, commitment, flexibility, coordination, communication, cohesion, decision-making, effective conflict management, social

relationships and performance feedback [96, 97]. In addition, task design influences collaboration [84, 90, 98].

Teamwork can be assessed subjectively by team members based on task outcomes, well-being and willingness to work together [90]. This can be useful in assessing effectiveness in process-oriented interventions such as clinical governance. Teamwork can also be assessed using objective team effectiveness outcomes based on team tasks in relation to expected outcomes. For example maternal and child health indicators such as maternal mortality, under five year mortality, immunisation coverage etc. However, assessing team effectiveness objectively in a complex environment such as health and healthcare where multiple actors and processes contribute to health outcomes may not be sufficient.

A number of studies have assessed teamwork based on e.g. perceived functionality [98, 99] or the role of teamwork in service delivery improvements [100], job satisfaction or personal outcomes [101, 102]. These empirical studies on perceptions focuses on team processes and can be useful for assessing team effectiveness. For example, Iedema et al (2005) suggests that for teams whose kinds of work are multidisciplinary, there is need for negotiation about all aspects of care, documentation of team practices to satisfy non-team stakeholders and recognition of need for continuous practice change [86]. In order to assess these team processes effectively, team members and non-team members' perception of task and processes are important. Yet, objective assessments are important for effective performance notwithstanding the contribution of perceptions in understanding contextual factors contributing to the observed objective outcomes.

Further, identifying the contextual factors that contribute to team effectiveness require monitoring and evaluating activities of teams [103]. This can be achieved through a documentary process where for example interaction and network of team and non-team stakeholders (such as

management, patients or external actors) are created [86]. In addition, producing meta-descriptions of work, clarifying work process and how it fits into what others do are important for understanding and assessing team effectiveness.

Alongside teamwork, individual creativeness and independence can also be useful among teams [87]. For example, in the DCST institutional design, teamwork encourages individuality because individuals' skills and competencies within each specialisation enrich the goal set for the team. Further, the multidisciplinary model encourages interdependence among team members in order to promote shared goals of the health system. Yet, evidence of what constitutes effective teamwork or how team practices influence outcomes are still limited in many settings.

With the above contextual background, I ask the PhD research question: What lessons can be learnt about the institutional role and functioning of the DCSTs within the context of a decentralising district health system in South Africa?

CHAPTER 3: CONCEPTUL FRAMEWORK

The conceptual framework developed in this PhD takes into account the DCST innovation aimed at change, their role in clinical governance as a broad policy context, its introduction within decentralisation and the nature of their functioning (Figure 3-1). The processes, policies and system actors (within and outside the health system's organisational structure) are envisaged to influence the functioning of DCSTs within a decentralising DHS.

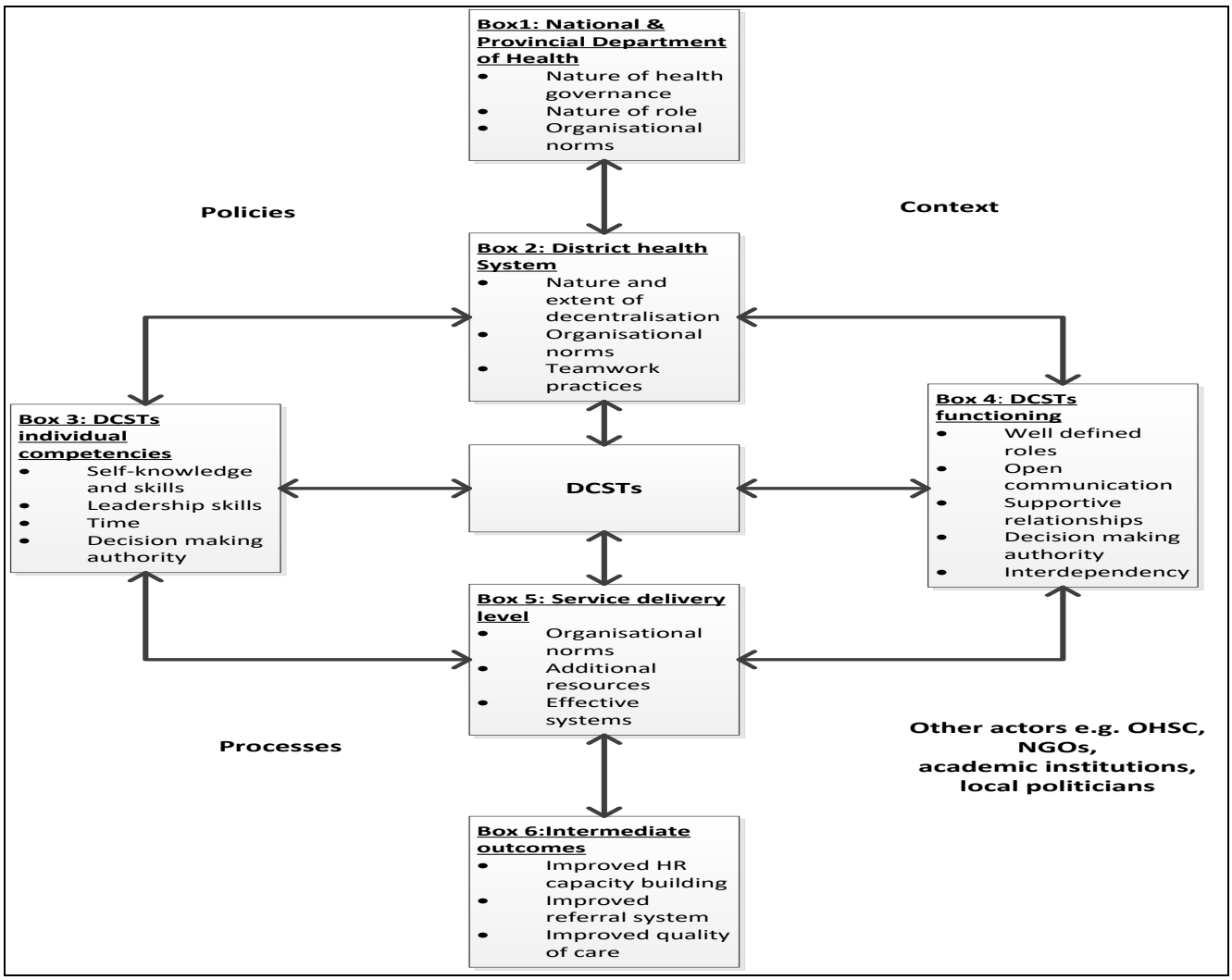

Figure 3-1: Conceptual framework for DCSTs' functioning in a decentralised health system

The conceptual framework is derived from the literature through policy reports (i.e. preliminary review of the DCST policy based on their expected clinical governance role and functioning) and literature review of research evidence on decentralisation and teamwork. The conceptual framework also illustrates the evaluation approach (theory of change) that is later presented in the methods chapter.

Further, the conceptual framework modelled the multilevel, interconnected and indeterminate factors or contextual layers of the health system that partly influenced the implementation and functioning of the DCSTs. The national and provincial departments of health will influence this functioning through governance and policy development, and the nature of their control and support to the DHS (box 1). The DHS, also responsible for health governance and implementation at the district level (as well as 'housing' the DCSTs generally), will directly influence their functioning and decision-making space. There could also be linkages between how services are provided at the DHS level, nature or role of local political structures and organisational norms.

Additionally, the overall capacity of the health system to provide an enabling environment for DCSTs to function properly is crucial (box 2). An overlap in roles and interaction is envisaged between the provincial /national departments, district (and sub-district) and facility levels (up-down arrow).

At a team-level, individual specialist competencies may be shaped by factors such as self-knowledge, leadership skills, level or years of service experience, decision making authority and time (box 3). The functioning of the team will also depend on clarity in the definition of roles, open communication, decision-making authority and supportive relationships (box 4). These may be influenced by the nature of governance and decentralisation within all the levels of the health care system (box 1 and 2). There is also an overlap between the competences of an individual

specialist and how the DCSTs will function as a team. For instance, leadership skills or style of an individual specialist may influence decision-making authority at an individual or team level. 'Organisational norms' will also influence the different levels of the health system, (box 1, 2 and 5); its hierarchical structure and values placed on bureaucratic and management practices. Such norms will also shape the values and culture of the different levels of the health care system, how resources are sourced and the effectiveness of the DHS. Policy objectives and the context in which the DCSTs will function may explain their decision-making authority. In addition, how the interaction among various actors will unfold. Yet the interaction and teamwork between the centralised and the decentralising levels are envisaged to be flexible and porous. It is envisaged that the flow of functions and the extent of support and reporting may depend on the relationships between actors and how each actor understands and defines their interaction and power and authority. In general, the nature of policy objectives and how they are interpreted or implemented within the context of the district may limit or enhance the performance of the health system. Potential performance outcomes will include improved quality of care (QoC), HR recruitment/capacity building/motivation and referral systems (box 6).

3.1. Conceptual framework and theoretical underpinnings: Complex adaptive systems

The above conceptual framework draws broadly on Complexity theory. It holds a perspective within organisational studies that can account for change and seeks to explain the non-linear behaviour of organisations [104, 105]. It conceives organisations as complex adaptive systems (CAS) and conveys a metaphor of health care organisations as system of living organism rather than systems as a machine [106]. McDaniel and colleagues (2009) extends this understanding of CAS as a 'metaphor' in the design of research and argues that CAS should be treated as a 'verb'

because the phenomenon being studied are often changing and unfolds in unpredictable ways [107].

CAS is relevant for the health sector environment where changes in one part of an organisation can have spontaneous effects on another. According to Leykum and others (2007), adopting a CAS's approach requires understanding of how individual agents learn, interconnect, self-organise and co-evolve with their environment [108]. Hence, a strong emphasis is on learning about organisational relationships, how they co-evolve within a single or multiples of organisational levels and how relationships can be understood relatively within a decentralised system [109].

CAS involve some key concepts [106]. Complex implies diversity (i.e. a wide variety of elements), adaptive suggests capacity to alter or change (i.e. the ability to accommodate change or learn from experiences), while system involves a set of connected or interdependent things. In CAS, things are independent agents, while agents can be person, organisation etc. who act based on local or surrounding knowledge and conditions [106]. Further, CAS are characterised by their (i) dynamic state (ii) complicated relationships and (iii) emergence. By dynamic state, agents influence constant and discontinuous change while complicated relationships occur due to large number of interdependent parts that alter other agents or are themselves altered. This complicated system when altered, after passage of time may bear little resemblance to its previous configuration or state. This is because each CAS is unique, context dependent and can exhibit emergence or self-organising behaviour [106].

Given CAS's root in complexity theory and science [110], its study is not limited to a single theory but rather encompasses a collection of theories and constructs that have conceptual integrity among themselves [106]. As such, in conceptualising this study, other theories such as the role theory (as

explored in more detail in chapter 6 - paper 2) and institutional theory using the institutional entrepreneurship lens (further explored in chapter 7 – paper 3) provided explanations and deductive interpretations for issues such as roles and responsibility as well as DCST individual and collective functioning. The use of these theories is important because more informed use of theory can strengthen quality improvement programmes and promote the evaluation of their effectiveness [111]. Moreso, the role and value of theory in quality improvement work especially in health care has been largely undervalued [111]. Yet the role and value of theory in strengthening quality improvement work is pressing because personal intuition is sometimes biased, distorted and limited in scope [111, 112]. In addition, the application of theory enhances the optimal exploitation of learning and accumulation and documentation of knowledge. Furthermore, use of theory promotes the transfer of learning from one project, one context or challenging experience to the other, as such enhancing better understanding of implementation process [111].

CHAPTER 4: METHODS

4.1. Evaluation of innovations or reforms in health systems

Evaluations are important in many settings (clinical care, public health or social programmes) to draw conclusions about an intervention or innovation and provide an estimate of the impact or influence that can be attributed to its introduction [113]. Using evaluation to understand how interventions work in practice are important in building an evidence base that informs policy and practice [113]. Evaluations are pertinent to health policy and systems strengthening to improve the effectiveness of interventions and inform evidence-based decision making [114, 115]. Interventions needing evaluation are often complex because they have several components influencing each other but they can also be implemented in complex systems with multiple actors and with numerous contextual factors that influence implementation [114]. While, there is "no one right" evaluation design [114], it is important for evaluation designs to be appropriate for the evaluation purpose or question whether formative or summative. It should also consider the needs of implementers and beneficiaries and intervention characteristics, including the complexity arising from the intervention itself, the contextual factors that define its introduction and the availability of data [114, 115].

While evaluation designs such as experimental, quasi-experimental and observational evaluation designs serve different purposes and answer different questions, the role of evaluators and investigators in the design varies as well, for example, how controls are manipulated if used [114]. Yet, these approaches, despite their suitability for different interventions may not sufficiently provide answers for the outcomes or effect of interventions [114]. Quantitative and qualitative approaches can complement these evaluations designs. While quantitative approaches helps to determine whether an intervention worked in relation to set outcomes (e.g. improved health

outcomes, quality of care indicators etc.), qualitative approaches can enhance evaluations by providing in-depth information on how an intervention is implemented, why it is yielding or not yielding the expected outcomes and variations in findings across contexts. Further, a mixed methods approach combining both quantitative and qualitative methods can provide richer understanding of the process, success or failure of interventions [114].

A number of evaluation frameworks use the quantitative, qualitative or mixed methods approaches for evaluating complex interventions. Process evaluation has become important to understand and assess the fidelity and quality of implementation, clarify causal mechanisms and identify contextual factors associated with variations in outcomes [113]. Similarly, realist evaluation provides a framework for context-mechanism-outcome in understanding what works for whom in what context [115, 116]. The UK Medical Research Council (MRC) framework for evaluating complex interventions cites the need to introduce a theory-driven approach to evaluations [117, 118]. In addition, a theory-driven process of intervention design and evaluation is affirmed to be more likely to ensure effective, sustainable and scalable evaluation [118]. Evaluators need to understand not just whether an intervention has the desired effect but how and why. The MRC recently integrated the theory of change (ToC) into its framework to help complement the conventional evaluation designs [118] as well as its process evaluation framework [113].

4.2. Theory of Change

Theory of change (ToC) originates from both evaluation and social change traditions [119, 120]. Many organisations use ToC for evaluations to help deal with the challenges of complexity associated with the design and implementation of programmes [119, 120]. In country development activities, that involves supporting national-level programmes, collaborating with local actors or organisations, ToC can encourage realistic and locally informed mappings of contexts, actors and

capacities for impact [118, 120]. De Silva et al (2014), note that ToC is not a sociological or psychological theory such as complexity theory [106], role theory [121, 122], institutional theory [123], or game theory [124] but a pragmatic framework which describes how an intervention affects change based on some framed assumptions [118]. Further, ToC can be strengthened by adding theories to help better explain why particular links happen [118] and when in order to accommodate evaluation informed, complexity informed and more social change informed thinking [125].

Eguren (2011) provides guidelines for understanding the complexity of social change processes in ToC thinking and highlight the importance of distinguishing the type of social change in order to give consideration for its influence on evaluation, whether complexity informed or social change informed. For example, one type of social change is transformative changes, which are triggered because of crisis and inaction. It involves un(learning) and liberating oneself from the - mind sets, relationships and identities formed that have influence on how we can enact or achieve the new realities that we set as a system goal [126]. In addition, understanding the complexity of social change processes underscores the importance of institutions - established rules, norms, values and practices that serve as a basis for determining the appropriate level of action [127]. This is because institutions influence transformative approaches [126]. Yet in considering transformative changes in ToC thinking, there is need for understanding the institutions that need transformation, points of departure for institutional change, which institutions can speed up change and interactions between institutions. Further, ToC focuses on analysing and proposing relevant actions to transformative changes which are complex in nature and which require flexible thinking-action logic from its users.

Mason and Barnes (2007), further suggests the usefulness of ToC for the evaluation of complex systems and social change initiatives given the inappropriateness of experimental models that focusses specifically on outcomes of interventions. However, this does not mean that ToC cannot link evidence of change to the intervention under study. It does provides flexibility about the methods to be used in evaluation. Further, they identified two methods used in generating a theory of change:

(i) Using conceptual models - involving an analytical process, access to considerable body of research literature and capacity to make both conceptual and empirical links across this, often termed research-led development of ToC.

(ii) Stakeholder involvement - in which community participation was central to the process of generating ToC. Yet this can take a retrospective approach, if stakeholders reflect on what they had actively decided to do rather than what they thought they should do to deliver the outcomes they sought.

Yet, authors stress that it is still unclear which methods are most appropriate: ToC developed by researchers based on a review of research evidence or ToC produced by stakeholders directly involved in the process themselves [119]. In a more recent work, Vogel (2012) views theory of change as a tool, methodology, process, a mapping and dialogue-based analysis of values and philosophies of change. This approach acknowledges that value of ToC in action-learning research because it can help facilitate direct engagements with actors who are part of a change process [120]. Further, because it is developed in a participatory way among actors trying to solve a particular problem or review a change process [126], there is potential for implying a conceptual or researcher-led construction as well as stakeholder involvements in a ToC construction.

ToC can describe, explain as well as critically assess the processes of reform because it takes into account the changes in the un/intended events in the implementation of programmes through constant engagements and processes of reflections by/and with actors [119]. When used as a tool, researchers help actors to identify the un/intended processes of change. It also helps to gather information about how a programme is implemented, the assumptions of those who designed it and the understanding of the implementation process and how it will achieve or aims to achieve its objectives [128]. The components of any given ToC may vary by user perspective but Vogel (2012) identifies four common components: (i) context that involves a situational analysis, evolution of the problem and opportunities for change (ii) identifying beneficiaries, actors and networks (iii) developing a sequence of logically linked events with assumptions that lead to a long-term change and (iv) a diagram and narrative summary.

While the literature is not yet sufficiently developed to answer the question whether a ToC developed by researchers based on a review of research evidence or ToC produced by stakeholders directly involved in the process themselves [119] is the most appropriate, in this PhD, I recognise the potential for both conceptual and stakeholder involvement to manifest in evaluation of programmes using a ToC approach. The framing of the ToC for the DCST is represented by the conceptual framework (Figure 3-1) and Appendix 1.

This PhD integrates the DCST ToC into the UNITAS project – universal health coverage in Tanzania and South Africa: monitoring and evaluating progress (UNITAS) approach focusing on:

> "thinking through and telling the story of DCST innovation as it is implemented, with particular concern for the assumptions and rationale guiding the way it is implemented in any particular place, and, over time, reflecting on the achievements and challenges of implementation. Furthermore, accounting for change in policy implementation because

past experience shows us how things change from plan to action, and that implementation is always an act of managing people, processes and unexpected events". Through a process of regular engagement around plans and experiences, the process began by:

- Talking with relevant people about the plans developed for DCST implementation, and the ideas underpinning those plans, and then tracking, through regular engagement (i.e. meetings, conversations) over time, what and how things unfold in practice, what achievements and challenges are faced, and how challenges are managed.
- Providing space for key groups of health managers and health workers to reflect on what they are doing, consider different ways of doing things, and so identify and address early challenges in implementation.
- Documenting DCST implementation experience, and the thinking behind it, so that the experience can be fed forward into the comparisons across programmes and between sites which will generate wider understanding of DCST policy implementation and its management" [UNITAS study 3 protocol].

4.2.1. PhD candidate's positionality in the UNITAS' project

I am part of the team of researchers (a research assistant) in one of the three institutions responsible for managing one of the three study sites which is the in-depth site for my PhD study. My main role involved contribution to tool development, assisting with research logistics such as fieldwork planning, data collection (as interviewer), data management, and data extraction and analysis and feedback meetings on the DCST case and other cases of the UNITAS' project. As at the time of my PhD protocol development in 2014, there was limited knowledge of the DCST implementation

process and I was only getting to familiarise myself with the DCST members in the in-depth study sites as well as district and sub-district level managers. Keeping an 'outsider role'[129], the only source of knowledge of the implementation process was through the DCST report document and other PHC reengineering related reports. As such, knowledge and understanding of DCST implementation evolved as I probe and engage with participants and researchers in the project. This served as a source of networking and learning about actors involved in DCST innovation and the processes of their functioning. Further it gave me the opportunity to develop an interpretivist approach to the action research and learning process.

I therefore construct the ToC for the DCST implementation and functioning as social change informed because crisis - poor quality of care, quadruple burden of disease and unmet MDGs [43] led to the introduction of the DCST innovation. The poor maternal and child health outcomes and struggle in meeting the MDGs constitute crisis that require transformative changes. While there is an anticipation for transformative changes, there is also consideration for complexity. This is because evaluating the influence of DCST on maternal and child health outcomes amidst other complementary reforms and processes for quality improvement is a complex process. Here, the ToC serves two purposes: (i) as an evaluation approach (ii) methodological tool for documenting process of change. As a methodological tool, theory of change helped to identify theories underpinning researchers and stakeholders' construction of change. As an evaluation approach, I used the ToC to review the assumptions that informed the DCST innovation and compared this with constructed views that may lead the DCST innovation to its intended change.

4.3. A case study design

Pertinent to the ToC driven evaluation is the need to gather in-depth information about the "case" of the DCST. A case study is commonly used when a current phenomenon is to be studied in its

real life context and the researcher has limited control over the development of events [130]. A case study can use diverse ways to generate detailed, rich and complete knowledge about a phenomenon that evolves in time with inter-related developmental events [131]. This is because the "case" and the context in which it is embedded are often blurred [130].

Here, the case is "the implementation and functioning of the DCSTs within a decentralising district health system", with specific focus on the processes and changes in the intended outcomes expected from the DCSTs implementation using three districts. Therefore, the case study adopts a holistic approach, where the case is inclusive of a major contextual factor - the DHS because it hosts the DCSTs implementation. A holistic approach to the case will enable the understanding of the units or layers that are unique to the whole [132]. This is achieved through a mixed methods approach, which is descriptive and interpretive in nature [132]. The qualitative component employed a number of complementary data collection sources such as policy documents, district-level reports and in-depth interviews. Question guide for the district-level ToC engagements are presented in Appendix 2. The quantitative component involved secondary data analysis of maternal and child health data/indicators compared over some periods.

4.3.1. Sampling approach and participants

The case study utilised multiple sampling units [132] in order to compare the case across different geographical settings where implementation is also ongoing. Selecting multiple sampling units was to help identify and compare the differences and similarities with respect to demographic, historical and resource capacity issues associated with the DCSTs' implementation. The sampling units in this case are the study sites drawn from the UNITAS' sampling strategy. This informed the purposeful selection of three study sites (full details in Appendix 2) and they were selected based on the following criteria (Table 4-1):

Table 4-1: Criteria for site selection
• Entry and access will be considered using our networks, as this will assist us in developing rapport with district managers
• Consideration of costs and logistics (geographical accessibility given budgetary constraints)
• A rural-urban mix (assumption: this division will influence how implementation will play out)
• Management capacity within the district (assumption: management capacity will influence how innovations will be implemented and sustained)
• Involvement of international partners/players (assumption: the presence of external change agents will influence implementation capacity and/or direction)
• State of case implementation in the district (some implementation needs to be underway, or about to start)

Source: UNITAS' protocol

The purposeful selection of study sites was initiated through context-mapping interviews with provincial heads of each of the nine provinces overseeing the range of policy reforms at a district level to achieve UHC.

A ToC approach guided the sampling by using the assumptions and reflections of these key informants about the ongoing implementation of the DCSTs and other reforms (at that period) to inform the purposeful selection of the three study sites.

Firstly, there was consideration for the available human capacity within the UNITAS project to manage the three study sites. Secondly, the three districts are representative of the 11 NHI pilot sites. In addition, the three study sites share similar rural-urban spread, constituted district management team and willingness of key informants to participate in the project.

Further a multi-stage purposive sampling ensued to further select one sub-district (from each district), facilities and participants in order to gather in-depth information about range of reforms

explored by the UNITAS project. This includes this case "the implementation and functioning of the DCSTs within a district health system". Purposive sampling is useful in a case study to identify and select sample elements – here, the DCSTs and those working with them - that are knowledgeable and available to provide information about the case [133]. Sample size calculation within a purposive sampling is often not intended to produce a sample that represents some larger population or to achieve generalisability but to ensure that the sample adequately represents the setting and issues to be studied [133]. A snowballing sampling approach was used to identify other actors that can enrich the depth of information and understanding of the DCSTs' implementation and functioning.

For this PhD, an in-depth study site was later selected among the three study sites with consideration for the closest in proximity for the doctorate study, already established relationship and willingness from district informants (especially DCST members) to participate in follow-up interviews, willingness to share DCST reports and other relevant information.

The research enabled engagement with participants who are diverse in their designation and role at the DHS level. This helped in co-constructing knowledge with actors and making significant inferences about the experiences of DCSTs implementation and functioning. Table 4-2 indicates participants within the UNITAS project who reflected on the DCSTs.

Table 4-2: Participants who reflected on DCST innovation across three study sites

Participants	First round interviews			Second round interviews		
	Study site 1	Study site 2[i]	Study site 3	Study site 1	Study site 2	Study site 3
DCST members[ii]	1 (3)	1 (5)	1 (3)	3	5	3
District and sub district managers	6	19	10	2	11	8

District hospital managers	4	7	8	4	2	2
Facility managers and staff including doctors in clinics	26	24	27	19	23	29
External actors	2	1	1	-	1	4
Total interviews	39	52	47	28	42	46
	Total number of interviews = 254					

[i] Study site 2 is the in-depth site for the PhD.

[ii]First round interviews for the DCSTs were in form of focus group discussions. Number of participants per focus group discussion is in brackets ().

4.3.2. Study Setting

Each study site represents a (health) district and is synonymous with a district health system – i.e. the lowest level within the national health system, responsible for the management of a geographical demarcation with a defined population. Typically, each district is divided into sub-districts and sub-districts are further divided into local areas with health facilities. Each district has one or more district hospital, community health centres (CHC), PHC clinics and/or health posts. Below are the demographic and socio-economic characteristics of each of the three study sites.

- District 1 is mostly rural with urban mix – with a population of 1,017,763 people, is the second most populated among the three study sites[2]. The population resides in dwellings ranging from traditional farmland communities, informal rural settlements to upscale urban areas. In District 1, 29.6% of the population lives in informal dwellings or squatter settlements and 21.3% of the population are unemployed. At time of DCSTs' implementation, there are still sub-districts who provide health care services through the

[2] The description of the study sites are based on the baseline district profile for all the NHI pilot sites between 2010/11 documented by the national department of health with additional information that enrich each context are also included.

local government[3]. In District 1, five of the seven sub-districts are administered under either municipal or provincial management. Health services are delivered by18 Mobiles health posts, 2 Satellites clinics, 54 Clinics, 4 CHC, 2 District Hospitals, 1 Regional Hospital, 1 Provincial Tertiary Hospital, 3 Specialised Psychiatric Hospitals and 2 Specialised TB Hospitals. District 1 has relatively low per capita expenditure, below the national and provincial averages. Expenditure in 2010/11 was more in line with the provincial average. Further, District 1 had far below national district management expenditure[4], but in line with provincial averages. The supervision visit[5] rate in District 1, declined since 2007/08 and is far below national and provincial averages. In 2010/11, fixed facility supervisory visit is 70.8% below the national average of 86%. District 1 is in a province with two other NHI pilot sites. This dynamic may have influence on additional provincial-level resources either partly through the availability of conditional grants and through even more DCSTs within the province.

- District 2 is largely urban with a mix of rural setting – and the least population of 695 933 people compared to the other two study sites. District 2 comprises of four sub-Districts. Two of the sub-districts are in peri-urban areas while the other two sub-districts are rural and all four have mining activities. During the course of this study, the province experienced a mining related tragedy that indirectly influenced economic activities as well as delivery of health care within the province. Further, similar to District 1, about 23.9 %

[3] In District 1 and 3, an on-going provincialisation process (i.e. the decision taken by the NDoH to transfer the responsibility for the delivery of PHC from municipalities or local government to provincial department of health) has not been finalised. This process has impact on the finances and human resource management of the DHS as well as the authority and power sharing between the levels of government and the levels of the national health system but these discussions are beyond the scope of this study (South African Local Government Association – Position paper on the provinciliasation of PHC services; June 2009).

[4] The proportion of total district health expenditure on district management is influenced by provincial policies on budget allocation, or by systematic provincial differences in how various types of expenditure are coded.

[5] Supervisory visits provide a system for identifying and addressing problems at facility level.

of the population live in informal dwellings or squatter settlements. However, unemployment rate is lower in District 2 (19.4% of the population are unemployed) compared to District 1, perhaps due to mining activities. In District 2, health services are delivered by 1 Regional hospital; 3 District Hospitals; 9 Community Health Centers; 27 clinics; 6 satellite clinics and 2 mobile health service units. The two district hospitals in the district are both situated in the rural area of the Province. In the urban areas, level one service (similar to those at the district hospitals) are provided at the Regional Hospitals and this has influence on the proportion of expenditure for the DHS in delivering level one services at a regional hospital. There are also cross boundary flow of patients from towns sharing borders with neighbouring countries and this has been reported to increase financial burden on the district. District 2 had below national and provincial per capita expenditure since 2005/06 but in line with provincial expenditure. The supervision rate decreased slightly in District 2 and is below national average, but in in line with provincial average in the last four financial years. Fixed PHC facility with monthly supervisory visit rate in 2010/11 is 56%, far lower than the 86% national average and is the lowest among the three study sites. This is the in-depth study site for the PhD.

- District 3 is largely rural with urban mix – with only 9.3% of the population living in the urban areas. It has the highest population among the three study sites of about 1, 364, 924 people and the most impoverished given its dependency ratio of over 80%. Yet when compared to Districts 1 and 2 only 11.9% of District 3's population are unemployed. District 3 lies along a coastline and consists mainly of indigenous greenery, which makes it one of the tourist attraction areas in South Africa and draws economic activities. District 3 is divided into four sub-districts. Health services are delivered by 2 Provincial Tertiary

Hospitals, 1 Regional Hospital, 12 District Hospitals; 11 Community Health Centers, 49 clinics, 52 Health Posts and 15 mobiles. It has the highest number of health care facilities among the three study sites. District 3's per capita expenditure is growing but, below the provincial as well as national averages. The district had above national expenditure on district management in 2010/11, but below provincial expenditure in 2010/11. In April 2012, the Provincial Department of Health put in place a moratorium on the appointment of healthcare workers to vacant posts at facilities throughout the province. It was instituted to control the chronic overspending that was pushing the provincial department of health deeper into financial crisis each year. District 3 have an above national and provincial average supervision rates of 90.8% as at 2010/11, despite its wide geographical landscape. Although, the NHI baseline district profile report suggests that facilities throughout the district are well utilised but reports from human rights activists suggest that there are huge problems with its health service delivery and quality because of the financial crisis.

At the time of data collection for this study (between September 2013 and November 2015), all the three study sites had four or more DCST members in place, which is above the minimum model. They are all NHI pilot sites, which imply additional funding for the DHS through the NHI conditional grant.

4.3.3. Structure and timing of data collection

Three research institutions collaborated on the UNITAS project and each was responsible for leading i) the data collection at one of the study sites (while staff from other institutions took part in data collection in other study sites), and ii) the tool development (Appendix 3-6) and analysis with regards to particular PHC reengineering reforms. My PhD work in the UNITAS's project allowed me to be part of the research team responsible for data collection in District 2 (i.e. in-depth

study site for DCSTs) and I led the preparatory work towards data collection for the DCSTs for all the three study sites.

Data collection and analysis was iterative in line with the ToC approach. It was phased overtime in order to draw on experiences, activities and processes surrounding the implementation of DCSTs. The iterative nature of data collection and analysis also fed into the analytical reflections of follow-up data collection. Data collection was concurrent in all the three study sites (see Table 4-2). Participants were engaged through different spaces - emails, telephonic discussions, and occasionally, chance encounters at other meetings or in public spaces. Participants (implementers of the DCST reform), with researchers, reflected over time on changes at a district-level, identified challenges and extracted lessons on the process of DCST implementation and functioning. I was responsible for the follow-up interviews in the in-depth study site accompanied by another member of the UNITAS project during all the in-depth interview sessions with the DCST in study site 2.

Quality was ensured in data collection process through regular team debriefing on the administration of tools and the application of guiding questions for IDIs and was overseen by all members of the UNITAS team. During the in-depth interviews efforts was also made to ensure that two interviewers sit in an interview session to ensure that relevant issues are covered. In addition, the theory of change process also served as a means of checking the quality of data through regular feedback processes allowing – respondent-checking, identification of gaps, clarification of ideas.

4.3.4. Data management and analysis

A data base was developed to keep all sources of evidence in their raw format for external-review process checking and iterative process of analysis [134]. This helped to link interpretations and conclusions to specific data in order to establish a logical and reasonable judgement. Additionally,

all hardcopy data were kept in locked files and were only accessed by researchers working on the project while electronic data in terms of audio file of interviews were password protected and only researchers within the project have knowledge of the password.

4.3.1.1. Data analysis

Series of data analysis workshops were organised by the UNITAS team, where a ToC data extraction template (see Appendix 7) was developed based on the ToC question guide. All data collected from focus group discussions and in-depth interviews were transcribed and coded manually into the data extraction template for the DCST. The conceptual framework (Figure 3-1) also guided the iterative nature of data collection and analysis and helped in identifying patterns or themes that emerged from the data. Table 4-3 illustrates the approaches to data analysis for the three papers based on set objectives.

ToC development informed further monitoring process that helped to constantly identify and review the contexts (assumptions, goals), actors and processes in the DCSTs implementation. For example, an actor map (Appendix 8 and 9) and meeting map (Appendix 10) was developed to help understand the relationships between actors. Further, the meeting map helped to link the spaces of engagement between actors and how it influence quality improvement processes. In addition it gave guidance on further engagements with actors. The iterative process of engagement with actors helped to construct a view of reality and social change [126, 135].

Table 4-3: Summary of data collection and analysis methods for the four studies

Dimensions of study	Research paper 1	Research paper 2	Research paper 3
Overall aim	Described 'who' and 'what ' the DCST is across three cases and	Examined the perceptions and experiences of DCSTs role/relationships	Explored the institutional-level functioning of DCSTs and examined whether DCSTs are

	how they are perceived and received at district level	at a district level conceptually through role theory	playing an institutional entrepreneurial function and how this manifests in clinical governance
Timing of data collection	2013	2013 to 2015	2013 to 2015
Scope of analysis	Three sites	Three sites	In-depth site
Data sources	• Policy review • In-depth interviews • Focus group discussions (2013)	• Policy review • Two rounds of: in-depth interviews • Focus group discussions (2013)	• Policy review • Two rounds: In-depth interviews • Document review: DCST quarterly reports
Analytical approaches	Inductively, analysed the reflections and experiences of participants by coding data based on semi structured question guides (on a site by site basis) and further coding based on emerging themes. Thereafter, deductively applied the themes in relation to the theoretical concepts.		
	Cross site analysis	Cross site analysis	Within-site analysis
Theoretical lens	Theory of change	Role theory	Institutional entrepreneurship literature

Furthermore, the DCSTs implementation experience and functioning was explored by comparing multiple sites (i.e. a cross-site analysis (objectives 1 and 2) as well as a single site in-depth analysis (objective 3). As such, the scope of the study started by focusing on breadth (all three-study sites) and narrowing focus down to one site for further in-depth analysis.

Firstly case-within-case analyses which was multilevel in nature; was used to vertically understand the DCSTs implementation in the study sites. The unit of analysis was an individual actor and/or DCST member basis for the detailed description and comparison of perceptions of DCSTs implementation experience in the three study sites. Additionally, an organisational level analysis of resources, structures, processes, demographics and norms helped to develop categories/ patterns for case comparison.

Thirdly, a cross-case analysis of the DCSTs implementation across the three cases or sites was compared horizontally (study 1 and 2). Similarities and differences were sought across units within each case. Overall, analyses enabled the study to provide a descriptive and explanatory account of the DCSTs implementation and functioning. In addition to bring together different perspectives while drawing out contradictions, gaps, silences and emergent issues over the study period. To ensure quality and rigour in analysis there will be regular engagements with participants; increasing the credibility of the analysis.

In addition to ensure that interpretation by the PhD investigator or team members are linked to participants' perceptions and/or experiences and to ascertain valid inference with regards to any observed changes.

4.3.5. Ethical consideration

The UNITAS project secured ethical clearance from the Faculty of Health Sciences, University of the Witwatersrand in 2013 (Clearance certificate No. M140528) and in 2014 this PhD study also secured ethical clearance (Clearance certificate No. M140623) from the University of the Witwatersrand (see Appendix 11). In addition, study approval was secured from the provincial and district department of health where the study was carried out. Written informed and signed consent was granted by all participants (Appendix 12 and 13). All engagements and discussions that fed into the analysis of the study were anonymised based on declaration given to participants.

In the conceptualisation of the study, it was identified that action research approaches are time intensive and may place additional burden on actors in finding spaces for reflection about their work. During the interview sessions efforts were made to respect the time of participants and proper arrangements were made in planning the interviews to minimise disruptions to work related functions.

CHAPTER 5 : RESEARCH PAPER 1

Here, I present below the first thesis objective namely: “to describe ‘who’ and ‘what‘ DCST is across three study sites and how they are perceived and received at district level”. This was published as a peer-reviewed chapter and builds on DCST early rollout progress (reported by Voce et al. 2014). This chapter provides a broad overview of the reflections and experiences of DCST implementation against the ideal objectives, motivation and assumptions guiding DCST development at baseline (2013). Through a theory of change approach, it reports on the setting and institutional structure of three districts, progress on recruitment, reported motivation, experiences of induction and orientation, lines of reporting, resources, expectation of roles and activities and the enablers of DCST early implementation. Find article via: http://www.hst.org.za/publications/south-african-health-review-2014/15.[Book chapter]

4 Understanding roles, enablers and challenges of District Clinical Specialist Teams in strengthening primary health care in South Africa

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District Clinical Specialist Teams (DCSTs) were introduced into the South African District Health System (DHS) in 2011. Their introduction was prompted by growing pressure in South Africa to achieve the Millennium Development Goals for maternal and child health before and after 2015. As emerging teams in the DHS, their roles are yet to be fully understood and defined in practice. Little is known about how other actors, implementers (district/sub-district managers) and intended beneficiaries (facility managers and staff) in the health sector perceive and relate to them. Documenting how roles and relationships are unfolding will help in understanding and learning from the process of their implementation and strengthening of primary health care (PHC).

This chapter engages with the early implementation process of the DCST reform in three of the 52 districts in South Africa. In-depth interviews were conducted between September 2013 and July 2014, and informal discussions and available district documents on the progress of implementation are drawn on to contextualise the process. Preliminary findings revealed the DCST to be an important innovation, with high and positive expectations from most actors about their role in PHC strengthening. Existing capacity and systems, flexibility, matching of expected roles to resources and targeted collaboration impacted on the extent of the DCSTs' integration into the system.

The DCSTs serve as an interface between different layers of the healthcare system which offers an opportunity to strengthen collaboration and teamwork. As districts begin to monitor and evaluate the early implementation of these teams, there is a need to continuously clarify and complement roles (of individuals and teams), build a shared understanding of these roles, and find spaces to reflect on innovative ways of managing the complex health system environment.

Preliminary findings revealed the DCST to be an important innovation, with high and positive expectations from most actors about their role in PHC strengthening.



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Introduction

District-based Clinical Specialist Teams (DCSTs) were introduced into the South African District Health System (DHS) at the end of 2011. Their introduction was prompted by the country's growing pressure to achieve the MDGs for maternal and child health (MCH) before and after 2015. The DCST innovation or stream is part of the strategy to reengineer primary health care (PHC),[1] along with the introduction of Ward-Based Outreach Teams (WBOTs), School Health Teams (SHTs) and contracted General Practitioners (GPs).[1-3]

South Africa's PHC reengineering strategy falls within the broader health system goal to move towards realising universal health coverage (UHC); where access to needed health services is available to all individuals irrespective of socio-economic or geographic characteristics. [4, 5] The main task of the DCSTs is to provide clinical governance at the district-level by overseeing quality in service delivery and effective management of resources to enhance health outcomes. They will also be responsible for coordinating other streams of the PHC reengineering strategy; and collectively (with other streams) promoting an integrated community-based approach to PHC delivery and the achievement of UHC. .

A ministerial task team (MTT) including experienced clinical specialists was set-up in June 2011 to provide guidance on the DCST composition, structure, functions and performance monitoring.[6] There was also a stakeholder consultative process with submissions to the MTT from relevant disciplines and all provinces.[6] DCSTs are envisaged to comprise seven team members with a nurse-doctor dyad in three key disciplines – Family Medicine (Family Physician and PHC Nurse), Obstetrics and Gynaecology (Obstetrician &/or Gynaecologist and Advanced Midwife) and Paediatrics (Paediatrician and Paediatric Nurse) and Anaesthetist. [6]

The process of the DCSTs' recruitment started in October 2011, although their induction and integration into the DHS level is still ongoing and being refined in different contexts. As emerging teams in the DHS, their roles are yet to be fully understood and defined in practice. Little is known about how actors perceive and relate to them. Documenting how roles and relationships are unfolding will help in understanding and learning from the process of their implementation and potential contribution to strengthening of PHC.

This study is part of a five-year multi-site project; Universal Coverage in Tanzania and South Africa: monitoring and evaluating progress (UNITAS).[7] The overall project aims to explore experiences of policy implementation in relation to UHC reforms over time, including the DCSTs, and to document factors that may explain change(s) in experience. This chapter engages with the early implementation process of the DCST reform in three of the fifty-two districts in South Africa. We examine how DCSTs' roles are being defined, communicated and integrated at different levels. Drawing on perceptions and understandings of district-and sub-district-level actors, we also considered how roles and relationships are unfolding in the process of policy change and some of the dis/enabling factors to the successful implementation and functioning of the DCSTs.

Brief overview of DCSTs as a reform and progress in implementation

The term 'clinical governance' has gained global recognition as a result of the increasing need to provide quality health care.[8] It is a policy instrument for improving health care delivery; it includes all strategies and activities targeting continuous quality improvement.[8] In South Africa, the handbook on clinical governance for the DCSTs defines clinical governance as:

"A framework that helps managers and clinicians (such as nurses, doctors, physiotherapists) to improve the quality of their services and safeguard standards of care, continuously, thoughtfully and in a co-ordinated fashion, by creating an environment in which excellence in clinical care will flourish"[9]

South Africa's PHC re-engineering policy also anticipated the role of the DCSTs in providing supportive supervision and clinical governance[1, 6] (an oversight role) to district and sub-district actors managing the provision of PHC, as well as training and mentorship to healthcare workers providing care at facility-level (pedagogical role). They are also encouraged to engage in clinical care for about 20% of their time in order to retain and keep up-to-date with their own clinical competence and expertise.[6, 10] In South Africa, the role and activities of DCSTs in improving quality, particularly in MCH services, is being articulated through an integrated approach, both through the composition of the team as well as its location 'between' different district-level programmes and other teams. It is recommended that each DCST should develop work plans that will complement other policy/programme objectives,[9] including the Strategic Plan for Maternal, Newborn, Child and Women's health (MNCWH) and Nutrition, a strategy for a Campaign of Accelerated Reduction of Maternal and Child Mortality in Africa (CARMMA)[11] and the National Core Standards for Quality.[12] There is potential for flexibility in the DCST work plans[9] which gives the DHS discretion to shape the activities and role of the DCST according to local context or need.

A number of activities have been undertaken at national, provincial and district levels to facilitate effective implementation of the DCSTs (see [13]). In October 2011, the DCSTs posts were advertised by the National Department of Health (NDoH) and candidates were shortlisted in November of the same year.[11, 13] In September 2012, there was a DCST national launch including DCSTs and health systems actors countywide. As of March 2015, 49 out of the 52 districts in South Africa have appointed at least a minimal team (a dyad – nurse/doctor pair; in one discipline).[13, 14]

However, the human resource crisis in the country[15] coupled with variations in district capacity and opportunities to attract staff have hindered recruitment and there are only two fully-complemented team(s) in the country.[13, 14]

An induction and orientation programme (carried out over one year) including eight workshops commenced in one province from August 2012 and was adapted and implemented in the other eight provinces from mid-November 2013. The first workshop was to help DCSTs identify and define their roles and to help DHS actors who will be working closely with the DCSTs also clarify their roles.[13] In order to ensure the effectiveness of teams, it was recommended that DCSTs should report to specialists at the provincial level.[6] In addition, the DCSTs should report to the district manager on general operational management of resources and functioning of the team at the district level.

Voce and colleagues (2014) state that the induction and orientation programme has helped the DCST identify their roles.[13] However, how these roles emerge in practice and how they are being conceived at the point of implementation require exploration. Here, we set out to understand the perceptions and experiences of the DCST implementation within available evidence from three districts. These documented reflections can contribute to understanding organisational and behavioural characteristics that support and challenge the strengthening of PHC.

Methods

The work presented in this chapter is guided by a theory of change (ToC) approach. A ToC approach is often undertaken in the evaluation of programmes[16] to engage with actors involved in the implementation of a particular reform or programme (here DCSTs). The ToC approach allows us as researchers to gather and document experiences of DCST reform through engaging in collaborative and reflective inquiry with those implementing the DCST reform[16, 17]. The approach enables us to tell a story about the DCST reform[17] and to compare reflections and experiences of implementation against the objectives, motivation and assumptions guiding its development. The TOC approach also offers a way of conceptualising change over time and provides a practical tool for engaging with stakeholders, monitoring change processes and evaluating the implementation of the DCSTs.[18]

Relevant permission for the study was received from provincial and district health Departments and Ethics' Committees of the Universities of Cape Town, the Witwatersrand and KwaZulu Natal. We conducted 31 ToC in-depth interviews (IDIs) with District Health Management Team (DHMT) managers, sub-district managers and National Health Insurance (NHI) coordinators (provincial and district level) in three districts. A ToC Focus Group Discussion (FGD) was also done with DCSTs in each district. The first round of data collection was conducted between September 2013 and July 2014, which included informal discussions and review of available district documents on progress of implementation that are drawn on to contextualise the process. As per a theory of change approach we explored actors' role and assumptions about the goal of DCST reform, actors' perceptions and experiences about DCSTs' roles, activities, relationships and processes involved in the DCST implementation. Written informed consent was received from participants, anonymity was assured and interviews were transcribed. Data were analysed thematically using a ToC framework[6]. Researchers embarked on an iterative process of interpretation by collectively sharing and debating understanding of the data collected and emerging themes. Reflections and experiences presented are those of district/sub district management and members of the DCSTs. Follow-up engagements are planned over time as part of the on-going ToC approach.

Results

Setting and Institutional Structure

DCSTs in the three districts were introduced into varying demographic and socio-economic context but with fairly similar mix of rural and urban setting. There are also differences in their expected population coverage and number of facilities in each district. For example, in one district DCST will be responsible for twice the population anticipated to be covered in another (Table 1). However, all districts share fairly similar MCH burdens[19] confirming a national challenge; with DCSTs being placed in contexts with seemingly high need for quality improvement activities.

Table 1: Summary statistics of DCST innovation between September 2013 – May 2015

DCST	**District A**	**District B**	**District C**
Population coverage[7] (*fixed facilities*)[20]	695,933 (*44*)	1,017,763 (*84*)	1,364,943 (*157*)
Salary[8]	District (as at May 2015)	Province	Province
Members[9]	*As at March 2015*		
Family Physician	✓	o	✓
PHC Nurse	✓	✓	✓

[6] Analyses of data presented in this chapter were perceptions and experiences expressed by participants between September 2013 and February 2014. There are indications of changes in DCST complements which may not have been captured in this analysis.

[7] Note: Population coverage – indicates population size of district and number of facilities in () – including PHC clinics, community health centres and district hospitals. Differences in reporting on demographic indicators have been noted, but information presented for all districts are from a uniform source.

[8] The expectation that DCST posts will be formally created within the district structure in the 2013/14 financial year has not been realised.

[9] Note: DCST/Provincial specialist complement and roles are those reported at the time of the interview, some of these might have changed.

Paediatrician	✓	X (resigned in 2012)	✓
Paediatric Nurse	✓	✓	✓
Obstetrician &Gynaecologist	✓	X (resigned in 2012)	X
Advanced Midwife	✓	✓	✓
Anaesthetist	X	X	X (resigned in 2013)
Provincial specialists in place	1 (Family Physician)	3 (Obstetrician & Gynaecologist, Family Physician and Paediatrician)	(1) (Obstetrician) and Paediatrician's appointment almost finalised
Reporting lines	District Family Physician and District manager	Provincial specialist and District manager	Provincial specialist and District manager
Leadership role	District Family Physician	District Family Physician / acting DCST	PHC Nurse

Note: √ - Filled, x – unfilled, ○ - acting position.

Source[2]: National Department of Health, 2013[20]; Census 2011[21]; National DCST database, 2015[14]

Each DCST has been institutionalised into differing DHS organisational arrangements or structures. In one district, there is an acknowledgement that the DCST fits well within the vision of a Provincial Family Medicine Department that has been supporting a district for some time. "…*in improving clinical expertise to what was formerly run as a nurse and management type of structure*" (DHMT Manager). In another district, the implementation of the team has been linked to a history of maternal health teams and forums. Another district is located in a province where there was a moratorium on the appointment of health workers during the early implementation phase of the PHC reengineering reforms (due to budgetary shortfalls and financial mismanagement).[22] This sets the DCSTs within differing organisational space in each district. For all three districts, support from the provincial specialists and/or district managers were seen as important for early implementation of the DCSTs.

Recruitment

The advertising of posts was coordinated by the National Department of Health while each province was responsible for shortlisting candidates, interviewing and appointing DCSTs. At a district level, DHMT managers from all three sites commented on head-hunting processes to attract specialists, because they had found the recruitment process challenging given the current human resource for health shortages in the country.[15] Table 1 shows the team composition in the three districts. The positions of doctor-specialists have been most difficult to fill, especially the post of the anaesthetist which remains vacant in all three districts and nationally only six posts have been filled.[14] In one district, two PHC-oriented medical officers with more than 10 years' experience were recruited in favour of "hospi-centric" specialists. This was done in accordance with the flexibilities highlighted in the National Department of Health's DCST job descriptions[6] (DHMT Manager).

At the early phase of the recruitment process, DHMT managers reflected on a high rate of turnover of DCST appointees; either as a result of resignation or appointees not taking-up their positions. DHMT

indicated that the recruitment process was done at province and there was limited involvement at the district level; this was demotivating for DHMT managers in two of the sites. Especially in one district, poor communication resulted in two headhunted specialists ultimately not taking up their appointments (DHMT manager). However, across all three districts, most of the DCST members themselves found their recruitment process satisfactory.

DCST motivation

DCST members described their motivation to participate in the reform as linked to personal, professional and social goals, including professional development, family commitments, an opportunity to serve in a place of birth, an inspirational quotation of the Minister of Health in the DCST advertisement and/or willingness to contribute to a particular field or discipline. DCST members also reflected on their passion for maternal and child health services and willingness to be part of change, which they all saw as timely. These personal, organisational and social motivators form a basis in which DCSTs' can relate to their roles and activities. DCST members did not comment on financial incentives as a motivation. Yet, DHMT members see the DCST innovation as expensive (but worthwhile) when compared to health care workers on the same level in the DHS structure.

"They are earning more than ordinary nurses, they are earning a lot of money," (DHMT manager)

"We appoint doctors at specialist level; money is being eaten up by their posts" (DHMT manager)

At the same time, the rate of turnover by DCST members (see Table 1) also suggests factors other than financial incentives as influencing motivation. These remain unclear but important for further understanding of early implementation processes.

Induction and Orientation

The DCST members in the three districts highlighted their participation in the induction and orientation programme designed to help them clarify their roles, standardise their activities and integrate them into the DHS. Most found the induction programme useful.

> *"Has built most of the relationships so that everybody could feel and see the importance and see the role that is going to be played; …not that we are here to step in other people's posts…..and we do not talk different languages whilst you are doing one and the same programmes" (DCST Member)*

However, some district based actors and DCST members expressed concerns around the length of time of workshops, preferring continuous on-the-job mentorship rather than monthly training events. In one of the districts, the district manager also raised concern about the frequency and length of days per month used in travelling for training by the DCST.

> *"You know, they must be practicing their clinical skill. Unfortunately most of their time has been absorbed by meetings and by training sessions….for instance travel; but I said we have to agree that it is not okay to travel outside of the district for more than fifty percent of your time"* (DHMT manager)

Additional challenges of the nationally-led induction programme include the exclusion of sub-district and facility-based managers in the induction which could have helped the DCSTs better understand their local context. Therefore, in one district, a district-level induction process to formally introduce the team to different district, sub-district and facility based actors was suggested to ease future relationships and expectations.

Reporting

DCST members have multiple reporting lines at district and/or provincial levels. In our study, four different reporting lines were observed. Firstly, DCSTs in all three districts report to the district manager (see Table 1). Secondly, in two of the districts, DCSTs also reported directly to provincial specialists, where available (Table 1), while in the third (where DCST is headed by a District Family Physician), there is no indication of a reporting line between the DCST and the provincial specialist. Lastly, in another team, the district Family Physician is in a dual role; acting in the post of the district Family Physician and playing a leadership role within the DCST. Our analysis shows that there is linkage and communication between the DCSTs and the district managers. However, there was insufficient data to reflect on the extent of communication between the DCSTs and the provincial specialists and better understanding of these relationships will be important for effective coordination.

Resources

The DCST policy recommends that provincial Health Departments should be responsible for DCST salaries, benefit packages and incentives[6]. There are differences in sources of funding for the DCST in terms of salaries and operational resources across districts. DCST salaries are being managed at the provincial level in two of the districts in line with policy recommendations[6] (Table 2). However, DHMT managers in one study site reported resource constraints regarding salaries. In this district, for the first 3-6 months of appointment, one of the DCST member's salary was paid through the tertiary hospital budget. As at September 2013, DCST members' salaries in the same district were paid through the district's budget, yet the expectation that posts would be formally created within the district structure by province in the 2013/2014 financial year has not been realised (DHMT manager) Two of the districts also commented on the unavailability of funds for DCST outreach visits or transport related costs.[23, 24] DCST members in one of these districts were advised to use their own transport for official duties until transport allowances are subsidised at the provincial level.[24] DHMT managers commented on the possibility of raising additional funding for DCST activities through a European Union conditional grant/ MCH grant but there is a low expectation about its approval. *"It [the process of sourcing additional funding] has been managed so chaotically. I am not sure that we are going to end up getting anything" (DHMT manager)*

However, in another district one of the participants indicated that the NHI piloting process and the PHC reengineering processes have brought substantial resources to the district.

> *"For the first time you'll hear somebody saying, 'Yes, for NHI, if you're asking for resources, within the period I've been here I think we have more than enough resources.' It's a question of how we use the resources" (NHI coordinator).*

There are also mixed feelings about availability of resources by the DCST members themselves. It was clear that there is a need for mobile technology (data and phone) for their effective communication especially during outreach or support visits. In one district where unavailability of such technology was raised as a challenge by DCST members, the district allocated a personal assistant to help manage their diaries and administrative needs (DCST member). In another district, part of the induction process for the DCST came with mobilisation of resources such as laptops and mobile (data and phone) connections through external funding sources from mining and insurance companies, and the municipality (DHMT manager). Despite reports of limited operational resources, DCSTs salaries have been successfully paid in all three districts.

Expectation of roles and activities

The perceptions of DCST roles by team members seem to align broadly with those stipulated in the DCST policy documents. Specifically, DCST members see their role as contributing to improving quality

of care, striving towards meeting the MDGs for mother and child health, assisting health care professionals to identify systems' problems and supporting mechanisms for appropriate and timely referrals. Generally, each member was able to link their role and desired change to a dyad/specialty specific set of goals, reducing maternal and child mortality and all were keenly aware of the importance of PHC and its required support.

However, one DCST member expressed some level of non-clarity about her role due to her newness to the district.

> *"Even up to now I don't know some of the facilities or some of the areas so yes it has taken some time for me to get to know what my role is and I'm still working on that"* (DCST member).

Yet, across districts, DHMT members' perceptions and reflections of DCSTs roles coincide with DCSTs' understanding of their own roles and that of policy documents, even though DCSTs sometimes feel otherwise. Expectations and perceptions of the DCST roles by managers at the different levels of service delivery within the DHS are depicted in Table 2 below.

Table 2: Expectations of DCST roles at the different levels of the DHS

<table>
<tr><th>Expectations of roles</th><th>District-level</th><th>Sub-district-level</th><th>Facility-level</th></tr>
<tr><td>Policy</td><td>Policy development once gaps have been identified</td><td>Reviewing district level policies</td><td>Training on policy - clinical guidelines and protocols</td></tr>
<tr><td rowspan="3">Monitoring and evaluation</td><td>Align DCST role with planned monitoring and evaluation units</td><td colspan="2">Identifying skills gap and developing related interventions</td></tr>
<tr><td colspan="3">Collect and review high quality statistics, give feedback in form of reports and undertake follow-up</td></tr>
<tr><td colspan="3">Roles of DCST relative to the roles of clinic supervisors, programme managers, facility managers and facility doctors or contracted GPs in clinical governance to be clarified over time</td></tr>
<tr><td></td><td colspan="2">Independent assessment of PHC services</td><td>Identify equipment needs</td></tr>
<tr><td rowspan="2">Mentorship</td><td>Collegial engagements with hospital specialists on clinical governance</td><td>Mentoring clinic supervisors and programme managers (MNWCH)</td><td>Mentoring facility managers, staff and Improving professionalism of health care workers</td></tr>
<tr><td>Role of facility doctors or contracted GPs in clinical supervision</td><td colspan="2">Support in supervision and training of chronic services</td></tr>
<tr><td>Training</td><td colspan="2">Develop plan for continuous medical education</td><td>Training linked to continuous professional development</td></tr>
<tr><td>Leadership</td><td>Assert leadership roles</td><td colspan="2">Facilitate pro-active engagements with relevant actors</td></tr>
</table>

Clinical support	Strive to reduce maternal and child mortality and morbidity	Improve the effectiveness of the referral pathways	Support facility by undertaking more clinical work

There are broad overlaps in the reflections of DCSTs about their roles and that of DHMT members and sub-district managers. Most of the similarities observed are in line with the expected outcomes of the DCST reform. Some disjuncture in the perceptions about roles is linked to expectations that others might have but which are not totally outside the scope of the DCSTs' functions.

> "*For us they go to Community Health Centres at clinical level and we are envisaging them also having them do night duty there because that's where you need the advanced paediatric skills" (*DHMT manager).

There is also the expectation that the DCSTs should support the delivery of chronic services and not be limited to maternal and child health services:

> "*I would like the DCSTs to focus out of the box of maternal and child. We have cases of tuberculosis running out there; let it be for all health problems"* (Sub-district manager)

Yet, our analysis highlights gaps in expectations of roles at the different levels (district, sub-district or facility) which were not clearly articulated in the reflections and experiences of actors and are potentially contradictory. The shaded boxes in Table 2 highlight some of the roles and relationships that need to be further clarified in order to address some of the disjuncture either in the expected scope and/ or nature of the DCST role and activities at the different levels where DCST support is required. Further analysis and exploration of roles and activities (beyond the scope of this chapter) is required.

DCSTs were also identified in different ways among sub/district managers who had high expectations and values. This particularly related to sub/district managers expectations of their roles in monitoring and evaluation, mentoring and clinical support (see Table 3). For some, DCSTs were assumed to be 'consultants' - with capacity to cover a large geographical area. They are also seen as 'specialists' – "*means that you know everything*". Others saw them as 'spies' who could identify practices that are not known to district management.

> *"What I said to the facilities and to the DCST, they are my 'spies'. If they see something wrong in a facility, I am going to send them and it is not in a punitive way, it is to understand properly what has happened and take appropriate action…. Some at the facility level don't recognise that as part of their role and accept it. Then we have got a problem"* (DHMT manager).

There is a close link between how the DCSTs are being identified as 'spies' and their approach or way of working. DCSTs also used their discretion and resolved to adopt an unannounced approach to outreach visits to deter facilities from false preparedness. This approach may lead to their identity being conceived as 'spies' at the facility level.

"Most of the time when we are going to the facilities, we don't tell them that we are coming because we want to see things as they are, so that everything is under normal circumstances," (DCST member).

In general, there seems to be a high expectation of their capacity at the DHS level, with one of the actor's reflections being: "*maybe we shall say we expect more than they can produce*" (DHMT manager).

Actual activities in practice

DCSTs seem to be engaging in similar activities across the three districts. Table 3 illustrates some of their activities as categorized in the monitoring indicators recommended in the ministerial task team report.[6]

There is uniformity in practices and activities in some aspects, originally guided by the orientation and induction series of workshops. For example the baseline situational analysis was reported in all districts and there are similar quality improvement activities. However, there are also activities unique to each district, informed by actual district needs. In District A, one of the key focus areas is on a quality improvement programme for malnutrition. Monitoring and mentoring on the South African Newborn Care Initiative (SANCI) and CARMMA strategy are foci points in District B while there is emphasis on proper recording of patient histories and benchmarking practices in District C.

In light of the DCST engagement with DHMT (Table 3), there are differences in DCST's role in management particularly their involvement in DHMT meetings. In one site the long-time local experience and influence of the district Family Physician team-leader was acknowledged as important in facilitating organisational support. "*Our supervisor, she will be there to represent us, if there is anything that we need to take to that forum then she will take it"* (DCST member).

In contrast, in another site DCST members are actively involved in the DHMT meetings and are also responsible for facilitating and ensuring that their planned agenda gets the necessary support.

Table 3: Activities of DCSTs reported by various actors

Recommended roles/activities	Reflections on activities/roles		
	District A	**District B**	**District C**
Annual situational analysis	Baseline situational analysis	Baseline situational analysis	Baseline situational analysis
Continuous quality improvement	Auditing of CHIPP[10] and PPIP[11]	Auditing CHIPP, PPIP and PMTCT[12] quality improvement	Auditing of CHIPP and PPIP
	High risk clinics at hospitals and community health centres		Mentoring on risk assessment and recording of patient history
	Identification of skill gap	Monitoring CARMMA strategy	Assessing facility structures, benchmarking good practices
	Supporting hospital QIP[13] on malnutrition	Mentoring on the SANCI	Supporting a neo-natal project
Education and training of health care workers	Mentoring on use of appropriate guidelines and protocols	Mentoring on use of appropriate guidelines and protocols	Mentoring on use of appropriate guidelines and protocols
	Training on IMCI[14], PC[15] 101, ESMOE[16], partogram plotting, IMCI, neonatal resuscitation	Training in ESMOE, family planning and HIV/AIDs management	Mentoring on management of born before arrival (BBA)
	Workshop on MDGs, ministerial priorities		Mentoring medical officers
	Campaigns and mentoring on cervical screening		Mentoring on use of equipment
Engagement with DHMT and other	One to two member representation at the extended DHMT meeting	Sit in the DHMT executive committee meetings	Actively involved in DHMT meetings when required

[10] CHIPP – Child Identification Programme
[11] PIPP - Perinatal Identification Programme
[12] PMTCT – Prevention of Mother to Child Transmission
[13] QIP - Quality Improvement Plan
[14] IMCI – Integrated Management of Childhood Illnesses
[15] PC - Primary Care
[16] ESMOE – Essential Steps in the Management of Obstetric Care

organizational activities	Supporting the referral system and practices	Supporting the referral system and practices	Supporting the referral system and practices
	Finalisation of emergency trolley and development of a road to health passport card	Developed a mentorship plan and team	
	Report to DHMT on a quarterly basis		Report to DHMT for reflection and decision making
Clinical outreach visits to facilities	Supporting maternal waiting homes and maternal obstetric units (MOU)	Supporting maternal obstetric units	Supporting hospitals and some clinics
	Monitoring and evaluation		Initiated an outreach program to include existing hospital specialists
Supporting the integration of the three streams of PHC reengineering and community engagement	Supporting GP contracting readiness activities	Supporting GP contracting readiness activities	
	Facilitated the procurement of equipment for ward based outreach teams (WBOTs)	Working with the Family Health Teams (Also known as (WBOTs)	Orientating WBOTs about their role in the community and referral system
	Started a PHC re-engineering forum	Started a mentorship team	
	Working with families and social groups	Working with School Health Teams	Health prevention and promotion activities in communities

Enablers of DCST implementation

The following themes emerged as enablers of DCSTs' implementation across the three districts: existing capacity and systems, individual/local discretion and strategies, trust building, knowledge of local context and systems and leadership and/or championship.

Existing capacity and systems

Existing organizational structure, resources and networks have influenced the implementation of the DCST and their activities. For example the conceptualisation of the DCST within an existing Family Medicine based structure was seen as a means of quickly constituting the team and providing leadership. The role of national non-governmental organisations (NGOs) was also highlighted as a useful support for DCSTs. NGOs in one district have been involved in capacity building for some time.

> *"The [NGO] partners they are assisting us a lot. Because if we are doing our district health management plan, …they assist us to come with one vision really … a shared vision within the district also maybe in identifying areas, because they are there as the eye for the district to say here are the areas where we need to strengthen… because they are not all over"* (DCST member).

In all three districts, DCSTs were able to access and utilise existing human and physical resources at DHS for their work. They are building networks using existing human resource capacity. For instance the DCST in one district is liaising with the PHC development and training coordinator for their training activities. They are involving existing sub-district trainers as mentoring/training teams. Similarly, a Regional Training Centre is being used as a physical resource for organising meetings, borrowing mannequins and utilising budgeted funds to provide catering during training sessions.

Local/individual discretion and Strategies

The use of discretion by individual actors or the whole team to operationalizing DCSTs also emerged as enabling their implementation. The manner in which DCSTs are asserting their leadership role in the interpretation of policy is important for their functioning. In one district, the DCST demonstrated the need for strategic planning and a well-considered way of working. Some criteria were developed in the selection of facilities for their clinical supervision visits based on need or rural setting. This was informed by their baseline situational analysis and a vision to develop some clinics as "clinics of excellence".

> *"We considered a lot of things. Some of them (clinics)…are new…brand new… they have just been built and opened officially, so we thought those people (health care workers) are new, they are coming from all over, they needed to be guided. Some of them are big clinics, some of them are MOU's, and we thought they will need more of our support. We thought those people should not feel that they are on their own, that we are there to support them"* (DCST member).

There is a sense of flexibility both at an individual and organisational level to influence the DCST implementation processes and to ensure their effective functioning. At an individual level, DHMT managers used their influence to garner resources for the team. In one instance financial resources were sourced outside the DHS while in another district a personal assistant was appointed for the DCST to help

in their administrative duties. At the DHS level, there was also an indication of human resource processes that tried to help DCST appointees get school placements for their children, in order to assist them in taking up their appointments (DHMT Manager).

Trust building

For DCSTs to work effectively they will need to establish relationships with a range of actors within the DHS. Relationship-building is being fostered at different levels of the DHS and among different actors in all three of our study sites. To enhance a flourishing relationship, the DCST highlighted the need to gain DHS actors' buy-in through the reaffirmation of their role. In one district the DCST facilitated a meeting with DHS actors to introduce themselves and to initiate a trust building process.

> *"We started slowly. We had to even go to an extent of having a meeting with the CEO's, head of departments of hospitals and maternal and child health. They were called to a meeting, we were introduced formally and we presented our specific expectations and roles. So we wanted them to get to know who we were and what we also expected from them. I think that helped a bit … they started to understand who we were, also to say what we were there for and slowly, gradually people got to know…I can say people are now at ease"* (DCST member).

Knowledge of local context and systems

Most of the DCST members recruited across the districts were previously working within their respective DHS. This places some of these DCST members in a position where they are able to quickly adapt to their new roles given their knowledge of the local context; *"they gave me the chance to serve in my area" (*DCST member).

> *"I am also a member of the Society of the Midwives […] So [as a DCST member] means now I would be having a better chance to be able to capacitate to see what is going on about midwives"* (DCST member)

Leaders and champions

There are actors who seem to be facilitating and influencing processes to integrate the DCST and ensure their effective functioning at the DHS level. Some of the DHMT managers exhibited values which were seen as features of a champion or important for effective leadership. In each district there is enthusiasm and ownership of the DCST innovation by at least one or two DHMT members, pre-planning and setting an agenda, influencing decisions in favour of the DCST activities, mobilising resources for DCST functioning and continuous monitoring of their activities and functioning.

> *"We were already there for eight or nine years. We knew people and how the districts worked. Therefore, we could facilitate how this new group coming in and how does this fit in" (DHMT manager).*

Challenges in the DCST implementation

The process of the DCST implementation has highlighted a number of enablers to its implementation yet some challenges remain.

Poor communication

The early implementation experiences reflect some level of confusion particularly regarding the role of the DHS in the recruitment process. There are also human and financial resource issues which were not effectively discussed and resolved between the DHS and the provincial level. Some of these seem to have been addressed in the short term in all districts but were not well communicated for better planning of early implementation process. In addition, some of the potential contradiction in the expected roles and activities of the DCST are also as a result of a perceived communication gap at a district/sub-district or facility level.

Difficulty in expanding coverage

The scope of the DCST activities is still constrained by geographical access especially in rural and remote areas. For example, in one of the study sites the number of facilities is enormous. There was a need for benchmarking practices *"because it is difficult to finish up those 134 clinics"*. It was also indicated that there is limited time to engage in support visits and clinical work given competing demands from programs. A DCST also highlighted an incomplete complement of the team and too many meetings as challenges to their functioning and activities.

Resistance and concerns at the front-line

DHMT managers and DCSTs reflected on the resistance by some facility/sub-district based managers to the DCSTs working in 'their' facilities. Supervision by DCST was seen as undermining existing practices and exposing apparent skill gaps and clinical incompetence. In all three districts, DCST members and senior managers noted there was an initial defensive and unreceptive attitude to the team from some sub-district, programme and facility managers. However, this was reported to be changing as their role and value becomes clearer to some of the actors.

> *"People perceived them a bit of a policing. It didn't matter how nicely and how positively we presented the stuff. We were welcomed very friendly but then we found that we are not welcome back in the facilities. It's much better now"* (DHMT manager)

> *"Some people were even uncomfortable about their posts….thought their posts were going to be redundant or invalid and that we were going to take over and be the principals and I think they know now that we are just there to support, coach them…not direct, but assist where possible"* (DCST member)

Potential implications of experiences

Experiences and reflections in the interviews suggest that DCSTs are engaging in many activities at the different levels of the DHS. This requires them to attend many meetings and forums of engagement. Many of the DCST members acknowledged that the induction and orientation programme workshops were useful but also time consuming. However, early stage implementation may require many meetings and communication in the process of role definition or clarification and the integration of teams into the DHS. Given that the induction and orientation programme is within a year period, it is likely that the time perceived as lost to meetings or frequency of meetings will reduce. However, the DCST will still be required to participate in other meetings or forums that require their time, knowledge, presence to influence change and promote their agenda. It might be necessary that districts continue to find innovative ways of engaging the DCST without necessarily doing so through physical contact times. DCST

implementation also highlights the importance of leadership in clinical support. Despite the multiple lines of reporting, all districts are managing DCSTs functioning processes. It is however important that a constant and clear communication between provincial specialists, district managers, other sub/district managers and DCSTs be facilitated. At the facility level, open communication about DCST roles could minimise tension observed in their role to mentor/or train health care workers, yet simultaneously appraise the effectiveness of their own interventions through feedback and follow-up visits. In the process of assessing their impact on training, they will continuously face the challenge of balancing the perceptions of being a supportive mentor on one hand, and a policing agent on the other. Further thought is required on how best relationships between DCST and other actors can be built to minimise tension and promote collaborative practices and teamwork.

The varying socio-economic and demographic context of the study sites need to be addressed with caution especially when assessing the impact and effectiveness of the team. Although DHMT managers and DCSTs are utilising their individual and team discretion to mobilise resources for the DCSTs' functioning these resources however are still inadequate especially in under-resourced settings where it may be difficult for DHMT managers to raise external funding. Similarly, DCSTs are also constrained by large geographical coverage, poor transport networks in rural settings and an incomplete team complement. The initial unavailability of funding for DCST outreach activities and salaries suggest that the DHS and the DCSTs are being placed under continuous pressure to effect changes in service delivery. However, expectations of the DCST role in reducing MCH indicators would have to be aligned with the required resources and mechanisms in order to achieve the desired change(s). Then the question arises whether it is still justifiable to have a homogenous team given the differences in population size, number of facilities and rural-context of the districts DCSTs are supporting. There is also a potential trade-off between expanding the number of DCST members within one team and recruiting more than one team in a district, which will require decision making around ideal team size, composition and ways of working. Further consideration must be given to recruitment challenges as well as the incremental costs and economies of scale of an expanded team while acknowledging the need to establish value for money. There is a need for further study to determine the most cost-effective way to maximize outcomes for clinical governance. Such an approach will strengthen the evaluation of the current DCST as well as hold lessons for similar future reforms including, for example, the newly anticipated mental health-DCST. Moreover, such evaluation would require consideration of the complexity involved in assessing the impact of one team in one context in terms of changes in health outcomes. In addition, there may be challenges in drawing conclusions about the impact of the DCSTs on MCH outcomes given several parallel programmes similarly focusing on MCH service quality improvement

District-based Clinical Specialist Teams are intended to inform/reform clinical governance within districts. However, clinical governance should not be restricted to this team but rather requires collaboration between DHMT managers, clinicians and the DCSTs. It is still unclear the extent to which existing specialists at the PHC level and other sub-district level actors can expand the scope of clinical governance or serve as a means of strengthening clinical supervision at the PHC level. There is an indication that DCSTs in some of the sites are facilitating engagements with other teams to improve training and mentorship activities, however, the extent of those relationships and its impact has not been analysed or assessed. The DCSTs will need to assert a strong leadership role to facilitate and sustain collaboration in a targeted way. The implementation process clearly demonstrates that as DCSTs begin to embed themselves within the health system, there will be a need for negotiation of the use of their time, capacity and role(s). In order for clinical governance activities to achieve desired outcomes, all stakeholders will have to exhibit a sense of ownership over the process. This implies that clinical governance is not limited to clinical supervision alone but requires resources that enable clinicians to perform their work efficiently.

Strengths and limitations of study

The ToC approach has been useful in conducting this study. It has helped in facilitating and documenting a reflective process of inquiry through our iterative process of engagement. We have been able to open up a process of dialogue where district-level actors and DCSTs are increasingly becoming aware of their successes as well as challenges. We found that most of the actors are willing to be part of an on-going process of change and there is a need for continuous researcher-practitioner as well as practitioner-practitioner engagements. Efforts by DHMT members and DCST themselves are part of a learning process that requires constant reflection and appraisal.

However, there are limitations to the study. We have only presented the perceptions and experiences of actors in three of the fifty-two districts in the country. The analysis has also excluded key informants such as the NDoH coordinators, district MCH coordinators and clinical specialists at the district level. Further understanding the nature of the relationships and networks between these actors and the DCST is important for PHC strengthening and the integration of clinical governance in the district. Engagement with these actors is within the scope of the UNITAS project, and future exploration of these issues is planned.

Recommendations and Conclusions

Drawing on the reflections and experiences from the early phase of the DCST implementation, we suggest the following operational issues for consideration:

- Districts should promote awareness of DCSTs, acknowledge that the DCST is a team and consider the role of team work/lessons for facilitating team work, and how the organisational arrangements or structures could promote teamwork, especially amongst actors within the district who have similar roles to the DCSTs

- High quality communication devices such as a 3G connection and the opportunity for tele-conferencing might be an option in helping the DCSTs better coordinate activities and manage time.

- Districts should draw on or engage with outcomes of a national costing exercise for PHC reengineering streams including the DCST reform that was reported to have been commissioned.[25] An additional costing exercise for the operational expenses for DCSTs' activities or an appraisal of the latter is required at a district or national level.

- National and provincial Departments of Health should support districts financially to properly implement the reform (resources and discretion – the small things can make a difference, e.g. personal assistant, 3G data, appropriate transport for rural areas)

In addition, strategically:

- Districts should develop innovative human resource support systems and strategies (e.g. finding schools for children of DCST members and continuing professional development/leadership training) that would make acceptance of job offers more attractive to prospective specialists given that personal factors are one of the motivators for job acceptance.

- DCSTs should identify and sustain collaborative strategies (through programmes, other teams and resources) that could expand their coverage and improve the effectiveness of their work at a district level by marketing the idea of 'clinical governance' to a wider team of clinical specialists and practitioners.

Our study shows, that while there was some level of confusion in the introduction of the DCSTs, there was also a degree of consensus amongst different actors in each district about their perceived role. It is important to acknowledge that processes of change take time and roles themselves are also changing. Role flexibility and adaptation is an important feature of effective teamwork.[26-28] There is also merit in each district having flexibility to implement 'their' DCSTs in ways appropriate to local-level needs. It is important to take cognisance of this and see differences in district context as an opportunity for learning.

We conclude that DCSTs are serving as an interface between different layers of the health care system. DCSTs and DHMT members are utilising existing structures, setting up systems and fostering relationships that could promote a well-functioning team and strengthen PHC service delivery system. The DCSTs are an opportunity to further strengthen collaboration and teamwork at the PHC level. As districts begin to monitor and evaluate the early implementation of these teams, there is a need to constantly clarify and complement roles – of individuals and teams – build a shared understanding of these roles and find spaces to reflect on innovative ways of managing the complex health system environment.

Acknowledgements

We thank members of the UNITAS project team including Professor Lucy Gilson, Dr Filip Meheus, Dr Maylene Shung, Dr Ayako Honda, Ms Janet Michel, Mr Ermin Erasmus, Dr Wezile Chita and Ms Lwazi Sikuza. Special thanks to all sub/district managers, NHI coordinators and DCST members in all the three districts. This research was funded through the European Commission's Seventh Framework Programme (FP7-CP-FP-SICA, grant agreement number 261349).

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CHAPTER 6: RESEARCH PAPER 2

The second objective: to examine how actors understand and respond to the new clinical governance role of the DCSTs is presented in the paper below. This paper explores the emerging 'role' issues over the first and second round interviews, both policy review and thematic and narrative analysis guided analysis of role. This study draws on role theory in order to situate DCST implementation experiences within the role theoretical framework, to explore how experiences of role fit with various role concepts such as role differentiation, role expectation and behaviour, role ambiguity and role adaptation. Additionally it seeks to examine factors that explains the variations in role among actors at the district level.

Find article online (open access): Oboirien KO, Harris B, Goudge J and Eyles J. (2018) Implementation of District-based Clinical Specialist Teams in South Africa: Analysing a new role in a transforming system. ***[BMC Health Services Research]***

Oboirien et al. BMC Health Services Research (2018) 18:600
https://doi.org/10.1186/s12913-018-3377-2

BMC Health Services Research

RESEARCH ARTICLE Open Access

Implementation of district-based clinical specialist teams in South Africa: Analysing a new role in a transforming system

Kafayat Oboirien*, Bronwyn Harris, Jane Goudge and John Eyles

Abstract

Background: Improving the quality of health care is a national priority in many countries to help reduce unacceptable levels of variation in health system practices, performance and outcomes. In 2012, South Africa introduced district-based clinical specialist teams (DCSTs) to enhance clinical governance at the lowest level of the health system. This paper examines the expectations and responses of local health system actors in the introduction and early implementation of this new DCST role.

Methods: Between 2013 and 2015, we carried out 258 in-depth interviews and three focus group discussions with managers, implementers and intended beneficiaries of the DCST innovation. Data were collected in three districts using a theory of change approach for programme evaluation. We also embarked on role charting through policy document review. Guided by role theory, we analysed data thematically and compared findings across the three districts.

Results: We found role ambiguity and conflict in the implementation of the new DCST role. Individual, organisational and systemic factors influenced actors' expectations, behaviours, and adjustments to the new clinical governance role. Local contextual factors affected the composition and scope of DCSTs in each site, while leadership and accountability pathways shaped system adaptiveness across all three. Two key contributions emerge; firstly, the responsiveness of the system to an innovation requires time in planning, roll-out, phasing, and monitoring. Secondly, the interconnectedness of quality improvement processes adds complexity to innovation in clinical governance and may influence the (in) effectiveness of service delivery.

Conclusion: Role ambiguity and conflict in the DCST role at a system-wide level suggests the need for effective management of implementation systems. Additionally, improving quality requires anticipating and addressing a shortage of inputs, including financing for additional staff and skills for health care delivery and careful integration of health care policy guidelines.

Keywords: South Africa, DCST(s), Clinical governance, Implementation, Quality improvement teams, Role, Adaptation

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Background

Improving the quality of health care is a national priority in many countries to help reduce the unacceptable levels of variation in health system practices, performance and outcomes [1]. Clinical governance is one of the strategies increasingly adopted to address poor quality of healthcare [2, 3]. Clinical governance is a framework or process that guides accountability and establishes specific lines of responsibility for improving clinical practice [2, 4]. Clinical governance seeks to help health care professionals to identify and alleviate error and to promote excellence in the delivery of health care [2]. This involves a range of activities such as risk management, professional development and education, clinical audits, the setting and monitoring of guidelines and standards, and workforce planning [2, 5].

Clinical governance involves multiple actors and this can make implementation unpredictable and challenging (6) especially when lines of responsibility and accountability are not clearly defined [5, 6]. The unpredictability of clinical governance processes are also partly due to the many possible strategies required for promoting good clinical practices. Additionally the range of actors involved in improving the quality of health care may have varying expectations about responsibilities and the behaviour demonstrated when delivering health care might differ from the expected norm [3]. As such, health care providers and managers view clinical governance as punitive and 'blaming' especially when there are conflicting variations in expectations [3, 5].

For policy makers seeking to overcome these challenges and improve quality of care, the introduction of new ideas, practices or roles – "innovations" [7, 8] – may strengthen software issues within a system such as lines of responsibility, accountability and interaction [9]. Innovations may be particularly relevant where clinical governance structures and processes are fragmented [10]. For example, the restructuring and development of established teams or the introduction of new teams may reduce professional exclusion and increase the use of system thinking for integrated interaction in quality improvement processes [3, 4]. It is, however, important to understand perceptions and relationships between managers, implementers and intended beneficiaries of clinical governance innovations in order to positively strengthen clinical care. We address this by examining the expectations and responses of local health system actors in the introduction and early implementation of the new clinical governance role of DCST in South Africa's district health system.

District-based Clinical Specialist Teams (DCSTs) in South Africa

In 2012, South Africa introduced an innovation to enhance clinical governance and provide supportive supervision in the district health system (DHS): District-based Clinical Specialist Teams (DCSTs) [11, 12]. The DHS is responsible for the management and delivery of primary health care (PHC). Each district has one DCST and each team ideally comprises seven specialists: Obstetrician-Gynaecologist, Advanced Midwife, Paediatrician, Paediatric nurse, Family Physician, PHC nurse and Anaesthetist. This innovation aims to combat South Africa's poor outcomes in maternal, neonatal, women and child health; improve quality of healthcare; and realise the millennium development goals for mother and child health [13] - 2015 and beyond [14]. Clinical governance is not new in the DHS – the DCSTs were introduced into existing practices, structures and roles that are designed to govern and improve the quality of health care. Given the introduction of the DCSTs into an existing quality improvement environment, we ask: how has the new clinical governance role been perceived and experienced? And why?

We use role theory to examine the expectations, perceptions, and responses of district-based implementers and intended beneficiaries towards the DCSTs. Role theory describes typical behaviour patterns of social and working life ("roles") [15]. Few studies have used role theory in understanding health service delivery [16, 17], the implementation of health system innovations [18], or how clinical

governance works. We engage with these issues in the South African context in light of the introduction and early implementation of the DCST role.

Roles and milestones in South Africa's Quality Improvement programme: contextualising the new DCST role

In 2001, South Africa set out to create an environment where 'quality of health care will flourish' [19]. However, this has not been fully realised. Figure 1 outlines South Africa's milestones towards quality improvement. Between 2001 and 2015, a number of policy frameworks, actors and mechanisms were introduced. These include the National Quality Policy (2001), revised (2007) which outlines the service delivery and regulatory framework for ensuring access and quality of health care [20]; the PHC supervision manual (2009) [21]; and the National Core Standards for Quality (2011) [22]; and most recently, following the introduction of the DCST (2012), the DCST clinical governance handbook (2014) [23].

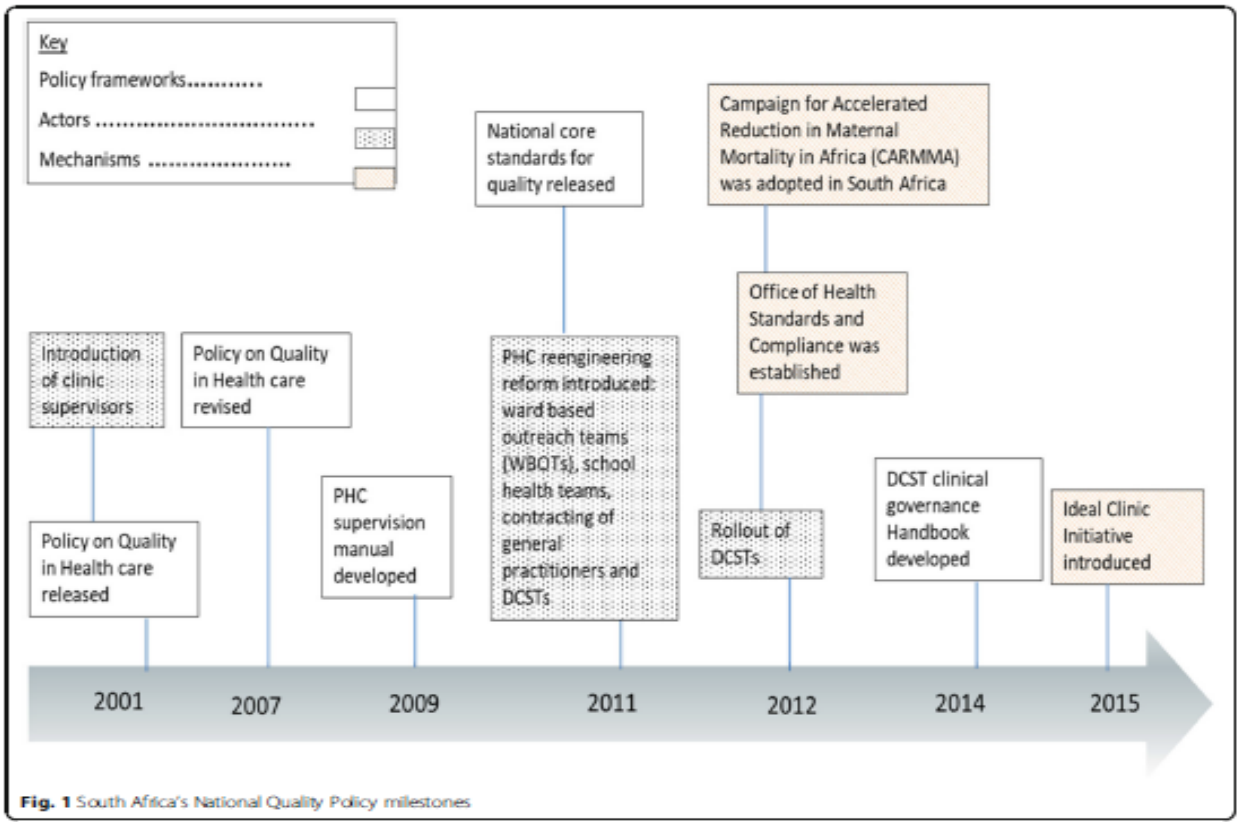

Fig. 1 South Africa's National Quality Policy milestones

All of these quality improvement frameworks aim to provide guidance for assessing quality of health care. Each also led to the introduction of new actors and mechanisms for promoting quality. For example clinic supervisors now known as PHC coordinators, were introduced to implement the PHC supervision manual [21]. In 2012 a regulatory body, the Office of Health Standards and Compliance, was established to drive accountability [20] partly through the newly introduced National Core Standards for Quality [22], which also heralded the DCST clinical governance handbook to guide DCSTs' activities [23]. Currently, the National Core Standards for Quality are the main standard for assessing care even though existing frameworks or tools are still operational. While old and new quality improvement processes and actors may therefore overlap in policy, this has not been addressed or reported in practice.

The DCST role

Based on recommendations from a Ministerial Task Team following stakeholder consultations, South Africa's National Quality Policy framework established the DCST role as:

> [The] DCST should ensure quality in clinical services; provide clinical training, monitoring and evaluation, support district-level organisational activities, support health systems and logistics, collaboration, communication and reporting, teaching and research activities [24].

The Ministerial Task Team suggests that, ideally, for administrative matters, members of the DCST will report and account to the district manager, while for clinical matters, they will report to provincial specialists in their respective disciplines [14, 24]. Accountability in clinical supervision is also derived from the National Policy on Quality, which gives all participants (and thereby, all "roles") within the health care system accountability for improving the quality of health care [19]. Yet the links between different system roles and accountability mechanisms for ensuring quality are not clearly articulated. To the best of our knowledge, nothing has been reported on whether and how quality improvement frameworks, actors and processes influence practices of accountability for supervision and clinical governance in relation to the new DCST role.

Role theory: A conceptual framework

The health care system is a complex adaptive system because of the multiple, diverse and interconnected parts that make-up the organisation [25]. These system parts are shaped by roles and interactions between roles. Roles are patterns of behaviour and attitudes that an individual exhibits as part of a social or work position and the expectations, which he/she holds for their own behaviour and others in an organisation [26]. Role theory has a long history in social science being developed from the ideas of Mead on self and motive [27] and by Parsons in the 1950s [15]. Role is an important element within an organisation and serves as a basis for identifying and placing persons in a team or organisation [28]. The DCST role is a structural status role, which is a position in a particular organisational setting that forms part of the duties or expected behaviour of individuals [28]. Kahn et al's (1964) Role Episode Model [29] as illustrated by Tan (2014) allows for the exploration of relationships between different individuals in relation to a role. This can either involve focal persons (i.e. a person who oversees a particular task, such as a member of the DCST) or as role senders (those who have a stake in the focal person's role, such as district managers, clinical supervisors and frontline health care workers), both forming a role set [30]. The relationship between role senders and focal persons is interdependent and involves a process of role sending from both sides for a role to be enacted [30]. Table 1 below illustrates some key role concepts relevant to this paper. The beliefs and attitudes of individuals about how they should carry out their work can positively or negatively influence how they and others appraise their performance [30]. Each role sending experience is also influenced by how members adjust their expectations [30]. Where expectations differ between focal persons and role senders, role conflicts or ambiguity may emerge, potentially leading to strain on individuals, role sets and the system [15, 33]. When a new role is created, there is role change in the system, which may influence the execution of and adaptation to a role by individuals [28]. Although conflicts and strains may result from variations in expectations, norms, attitudes, and/or behaviours of individuals, other factors may also contribute [15]. These other factors may be contextual and systemic and could include the nature of structural status roles (i.e. positions) within an organisational setting.

Table 1: Some relevant role theory concepts and terminologies in the literature

Role concept	Definition	Example
Role differentiation	When we classify given category of individuals with given tasks for the duration of a role system [26]	Distinguishing members of a role set along lines of occupational specialisation (e.g. different specialisation amongst team members in a DCST) or hierarchy (i.e. supervisor and worker line, depending on personal attributes (skills and experience) [26].
Role expectation	What others in the organisation think an individual is responsible for and how the individual should carry out those responsibilities [15, 31].	The role senders' understanding of the focal person's job (or vice versa) – based on expected outputs of this person's role [32]. This may be derived from a work contract, communication by leadership, or policy directives or experiences.
Role behaviour	What an individual actually does in carrying out the job [15, 31].	Both role senders and focal persons exhibit behavior patterns that describe their occupation and reflect the norms and values of the organisation [32].
Role ambiguity	A condition in which expectations or knowledge are insufficient or incomplete to guide behaviour [15].	Due to multiple expectations in an uncertain or complex environment, a focal person may express lack of clarity about how to fulfil demands of the role senders [33].
Role conflict	When there is concurrent appearance of two or more mismatched expectations for the behaviour of a person [15]	Focal persons, whose role spreads across different categories of job interactions, may experience conflicting demands from managers, health professionals or peers [33].
Role consensus	Denotes agreement among expectations that are held by various individuals about a particular role [32]	Ideally, as part of an employment contract, focal persons and role senders are made aware of expected behaviour and rules of enforcement and compliance are agreed upon [32].
Role adaptation/ accommodation	A process through which the shared conception and execution of role performance involves flexible combinations of adopted belief, value, coercion and absence of obvious options [28]	Through a change process, a chain reaction results in adjustments to role through a process of diffusion where role begins with a few innovators (focal persons). The process unfurls with more early acceptors, and then an early majority and a late majority, and finally the few laggards. Then diffusion reaches a stage when no more people change to the new role conception [28].

In a clinical governance setting, an ideal role set may comprise all health care professionals responsible for ensuring quality in service delivery [2, 5, 34]. In South Africa, DCSTs are seen as focal persons for the governance of quality at the district level. In the DCST policy framework, an ideal clinical governance role set envisages collaboration between DCSTs and a number of potential role senders. These include existing hospital specialists [24], provincial specialists who are DCST mentors [23], members of the District Health Management Team, including PHC and Maternal, Child and Womens' Health managers, and coordinators at sub-district level, frontline service providers, intersectoral partners, and staff working in other streams of PHC reengineering (ward based outreach teams and school health teams) [14]. In other words, a complex role system has been made potentially more demanding by the creation of DCSTs.

Prior to the implementation of the DCSTs, district-based quality teams and individuals, including clinic supervisors or PHC coordinators (now intended beneficiaries of the DCSTs) were responsible for clinical supervision [21]. While these posts still exist, limited capacity, inadequate operational resources, and

irregular monthly supervision visits have been reported as key challenges in different provinces [35, 36]. In addition, limited stewardship and poor management have been documented at all levels of the health system [37].

Given the broad scope of actors and the multiple roles associated with clinical governance, there is a risk of role duplication, conflict, ambiguity or confusion. In this paper, we set out to explore role expectations and behaviours from a range of perspectives, including those of DCST members and their intended beneficiaries. We ask: how has the new clinical governance role [of DCSTs] been perceived and experienced? And why?

Methods

A theory of change approach to programme evaluation [38, 39] guided our interpretive case study research [40]. Theory of change helps to facilitate direct engagements with and among actors who are part of a change process [38] while utilising a reflective process to construct a shared view of reality through actors' assumptions, interests and experiences [39]. This involves a logical thinking and action process for understanding the desired change being sought, its context, the process or strategies through which change occurs and factors that influence change [39]. In this study, a theory of change approach allowed participants to reflect on their assumptions, perceptions and experiences of the new DCST role within an existing quality improvement context. It also allowed researchers to construct a logic process of how DCST innovation developed within its context [39] by providing a description of what influences the implementation of the innovation. Theory of change is a critical, participatory approach which is about planning and evaluating practices [38, 39], but also leads to the reflection and possible change in organisational characteristics, including roles. It is thus a transparent methodology for including relevant stakeholder perspectives and thus providing space to co-construct with all participants a collective view of the realities of the DCST innovation.

Research setting and site selection

This study is part of the UNITAS project (Universal Coverage in Tanzania and South Africa – monitoring and evaluating progress), a five-year study of district-level implementation of innovations towards universal health coverage (2011-2016). In South Africa, we monitored the introduction and early implementation of DCSTs in three of the country's ten National Health insurance pilot districts [12], using a comparative case study approach. Comparative case studies use two or more cases to identify more generalisable knowledge about causal questions – how and why particular programmes or policies work or fail to work [41]? They involve the analysis and synthesis of similarities, differences and patterns across cases that share a common focus or goal. They are useful for understanding and explaining how context influences the success of an intervention and how better to tailor the intervention to a specific context to achieve intended outcomes [41, 42]. The approach therefore fits well with a theory of change perspective.

South Africa's DHS is at the base of the national health system, comprising a defined population within a geographical area (a district) with health care facilities serving that population [43]. A district is typically divided into sub-districts and local areas (including clusters of health care facilities – PHC facilities and a district hospital). Each district is managed by; a district health management team and supported by sub-district management teams, PHC managers, PHC coordinators (local area managers or clinic supervisors), programme managers, and facility managers.

Our sampling strategy was informed by an initial context mapping of the ten national pilot districts, based on a review of policy documents and media statements and key informant interviews at a provincial level, where the task of operationalising the national health insurance reforms had been assigned. We then purposefully selected the three districts based on district health management team functionality, the presence of already-recruited DCSTs, and managerial willingness to participate.

At the time of selection, the study sites were (and largely remain) characterised by their poor performance on key health indicators and outcomes [44], including maternal and child health, with maternal mortality and still birth ratios far above the national averages of 133 per 100,000 live births and 22 per 1000 birth respectively [44, 45]. Table 2 presents some differences in the geographical coverage and composition of the DCSTs in the three sites. There are at least three DCST members in each DCST in the three sites but none of the sites has an anaesthetist. This is also observed at a national level where only 9 out of the 49 constituted DCSTs had an anaesthetist [46, 47].

Table 2: DCST expected geographical coverage and composition across cases

DCST	**District Case 1**	**District Case 2**	**District Case 3**
Population coverage *(Number of fixed facilities)*	1 017 763 *(84)*	695 933 *(44)*	1 364 943 *(157)*
Maternal mortality in facility ratio (per 100,000 live births) (2013/14)	208	257	229.7
Stillbirth in facility rate (per 1,000 total birth) (2031/14)	32	27	26
Household income (Annual), 2011 ZAR	92, 986	82,266	43,652
Dependency ratio (per 100), 2011	50.7	50.1	80.5
Team complement (composition)	As at March 2015		
Family Physician	○	√	√
PHC Nurse	√	√	√
Paediatrician	X (resigned 2012)	√	√
Paediatric Nurse	√	√	√
Obstetrician & Gynaecologist	X (resigned 2012)	√	X
Advanced midwife	√	√	√
Anaesthetist	X	X	X (resigned 2013)
Key: ✓ – Filled, x – unfilled, ◯ – acting position			
Data compiled from: Oboirien at al 2015 [45]; Census 2011 [45]; District Health Barometer 2013/14 [44] National DCST database, 2015 [47]			

Variations between these study sites are seen in the composition of each DCST, population coverage, and geographical terrain (i.e. rural and urban spread). District 1 is the most urban of the three and District 3 is deeply rural. There are also cross-site differences in socio-economic indicators, including household income (higher in the more urban study sites) and dependency ratios (higher in the rural study site). The research took place within the context of provincial moratoria on human resource recruitment in all three study sites, and they were under strain in dealing with human resource turnover and shortages [48]. In each study site, we first carried out a set of in-depth interviews with district-level actors charged with overseeing and managing the implementation of the DCSTs. These interviews helped us to identify where the DCSTs were most active and we then purposefully selected one sub-district in each study site for further in-depth work. At each stage of our inquiry, we used snowballing to identify actors who were interacting with DCSTs; a sampling strategy suitable for the generation of knowledge about a phenomenon (DCSTs) that evolves over time and with inter-related developmental events [49].

Data collection

Our study approach involved a phased process of engagement at district, sub-district and facility levels, cascading the level of engagement from the implementers to the intended beneficiaries. Data were collected between 2013 and 2015. We carried out 258 in-depth interviews with actors at different levels of the DHS and facilitated one focus group discussion with each DCST (Table 3). A theory of change interview guide (Appendix 1) was used to gather information about the vision and goal of the DCST innovation, expectations about the team and associated activities, assumptions about activities in relation to goals, processes of implementation, actors and relationships needed to drive implementation, and expectations of actor roles in the process.

Table 3: Study participants who reflected on DCST roles

Participants	Case 1	Case 2	Case 3	Total
District level - Top management level	23	26	12	61
Sub-district level - Middle management level	4	9	2	15
Facility level - Service delivery level	69	58	55	182
Total number	96	93	69	258
Note: Follow-up interviews are included above				

Data analysis

Our analytical approach involved i. content analysis of policy documents, ii. extracting stories from the reflections of participants, and iii. thematic analysis [42], informed by the iterative process of data collection and engagement with actors, as well as iv. mapping actors who were involved in the implementation of the DCSTs in each district (Appendix 2). We further analysed a “typical” DCST position within the DHS organisational structure using the organisational chart tool in Microsoft Visio 2010. In this actor mapping, we categorised actors into three levels; district level, sub-district level and facility or service delivery level. Then, using policy documents and interviews, we charted roles of expected beneficiaries at the sub-district level/middle management level (those who were involved in some form

of clinical governance). Thereafter, we explored the qualitative reflections and experiences of different actors through analysis of the in-depth interviews.

Participants gave informed consent, which was signed and witnessed, and members of the research team carried out interviews in English. Interviews were audio-recorded and transcribed. We coded the transcripts (per participant and by district, sub-district and facility level) manually, using a theory of change data extraction template. Once extracted, we generated codes and developed these into broad themes, capturing and interpreting meaning in this process. We went through stages of data reduction as a crucial part of qualitative analysis [42]. Analysis followed an iterative process of familiarisation with the data, creating themes, and synthesising the data while avoiding over-condensed data (which can lead to loss of content or context) [42]. Interpretation involved situating the DCSTs within the context of each district, as well as the wider national policy discourse, and then inductively locating actors' reflections within our broader theoretical perspective on roles. Both thematic content analysis (coding and syntheses of different reflections) and extraction of stories (of three DCST members - one in each district) were used to explore the understandings, expectations, and behaviours of different role players about the new DCST role in clinical governance. At least two members of the research team extracted all data and a process of member checking as part of the participant feedback and engagement required of a theory of change method was in place to ensure accuracy in interpretation.

We categorised actor perceptions and experiences into broad themes, for example, position and work experience of actors in DHS, knowledge of the DCST innovation, assumptions about the DCST's role, activities, and processes. 'Role' emerged from the empirical data and was developed into a key analytical idea or 'sensitising concept' [50] with a clear definition comprising other attributes or sub-concepts that captured actor accounts of the DCST. Consequently, we turned to role theory as a conceptual framework for informing our analysis and interpretation.

Results

Using role theory, this section is structured around concepts of role differentiation, adaptation, expectation, and behaviour (Table 1). Role differentiation is applied to how participants distinguish the work of individuals within the clinical governance role set. This concept helps to describe variations in expectations about the DCST role. We also explore the reactions and drivers that influence the ways that actors adjust to this new role (role adaptation) and the understandings and (role) expectations that they, as members of the role set, bring to the DCST role. In addition, the actual activities of members of the role set (role behaviour) are presented as a way of explaining their conceptions of the DCST role.

Role differentiation - policy versus implementation

We found through our review of the South African health care quality programme (Figure 1) that there are potential overlaps in the frameworks for assessing quality and actors involved. This is also evident in actors' perceptions and experiences. In our view, the multiplicity of frameworks and actors within the district health system influenced participants' expectations and experiences of the DCST role. For example, most of those occupying quality improvement roles at the sub-district level (intended beneficiaries of the DCST) used the National Core Standards for Quality, alongside other supervision tools, to guide their activities. For some, however, these standards were perceived as "independent" from an integrated quality improvement approach [PHC coordinator case 2]. Yet, South Africa's National Core Standards for Quality framework is supposed to serve as the umbrella policy framework through which roles for quality improvement are derived. Although there was recognition of the need for inclusiveness

in quality improvement activities and shared understanding, the central role of the DCST in this process is still unclear among intended beneficiaries due to lack of clarity about the role of DCSTs themselves:

> *"…if we ask what the role of the DCSTs is? But it […] won't filter clearly" [MCWH coordinator case 2].*

Role differentiation in positions (structural role)

Figure 2 indicates that the DCST has a uniquely positioned status within the DHS because the team is part of the top district management structure (having access to information on district needs and providing strategic direction) but DCST is also positioned to organise, steer and support processes across the entire DHS structure: a diffuse role without direct authority. Therefore, structurally, the DCST role brings with it the risk of role ambiguity, confusion, and conflict. As Figure 2 suggests DCST members report and account to the district manager in all three sites and in policy, they are expected to report to provincial specialists.

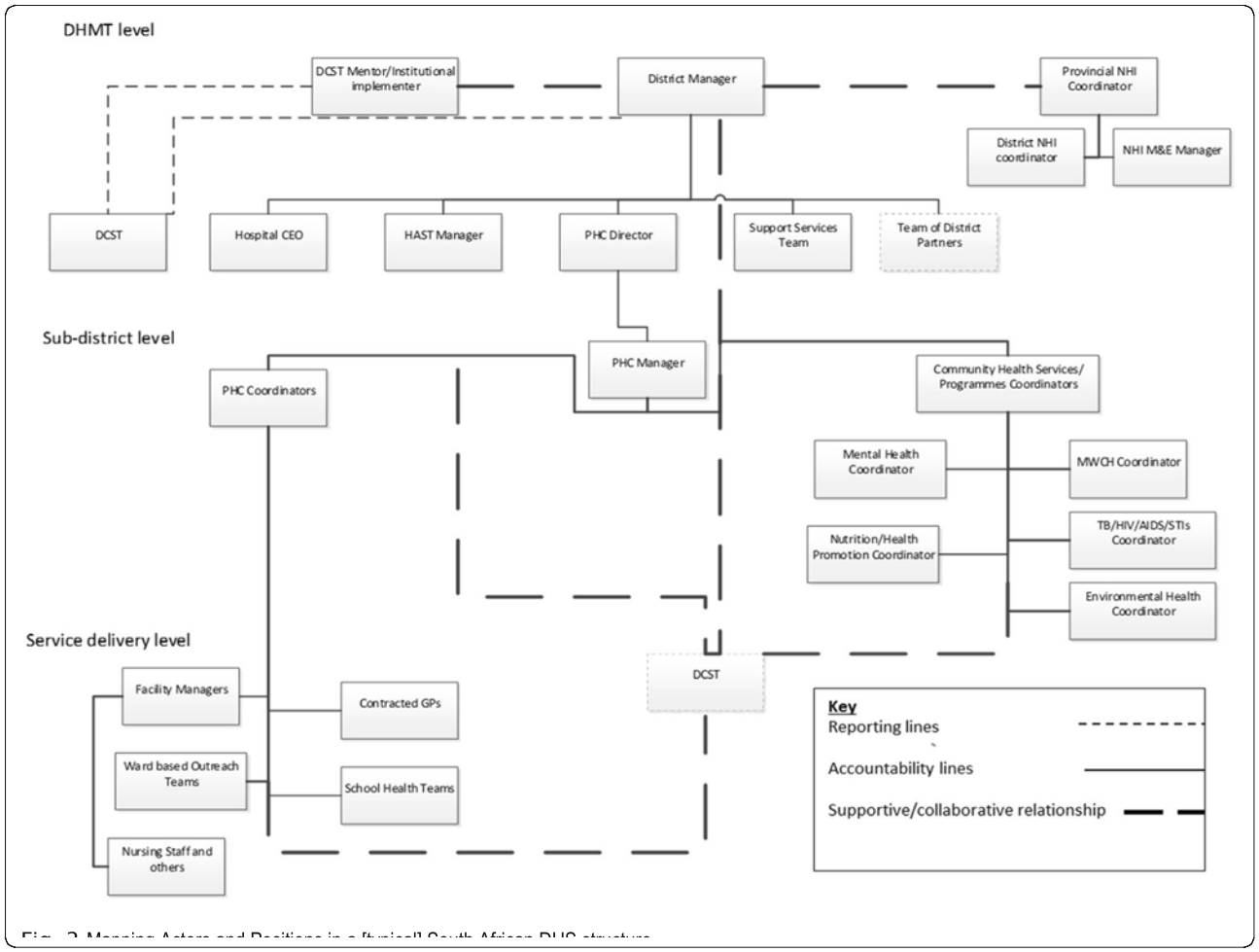

Fig. 2 Mapping Actors and Positions in a [typical] South African DHS structure

However, DCST interaction with provincial specialists was not substantially reported during the course of this study. At the same time, no one is directly accountable to the DCST within the DHS structure; rather their structural role is collaborative and supportive. In our study, the potential for collaboration and support was largely dependent on the structural position of those occupying other quality improvement roles. At the top management level, where the DCST structural role is closely linked to that of a wider managerial responsibility for quality improvement, there was a fair level of role consensus.

Top managers at the district level in all three districts were clear that the DCST has a role in 'management', as well as quality improvement yet they expressed a higher expectation than anticipated by the policy for a DCST role in clinical care and service delivery:

> *"…more than being managers or technical advisors, they should assist in clinical care". [DM Case 3]*

By contrast, role ambiguity and conflict were more often expressed at the sub-district level, particularly around lines of authority and accountability. In all three sites, the DCSTs were perceived to be operating above the authority and jurisdiction of middle managers, as "investigators" [PHC Manager Case 3]. For two sub-district managers, the team was portrayed as by-passing the authority of even the district manager with an imagined reporting line to the National Health Minister. Sub-district managers also raised questions about their own authority in relation to the new DCST role:

> *"Somehow DCSTs are infringing into facilities because they want to discipline… as 'management' but you won't come into my house and discipline my child without telling me, so sometimes I feel it is causing friction" [PHC Manager Case 2]*

For those occupying the sub-district tier of the health system, the new DCST role was largely differentiated through hierarchy: less of an advisory/cooperative role (as envisaged in the policy ideal and by the senior district managers) and more of a role that suggests imposed authority. By contrast, some DCST members were uncertain about whether they actually had authority to execute a managerial role.

> *"I don't think that we are managers as such…. We cannot take decisions. We can recommend but what happens after that really is not within our boundaries…." [**DCST FGD Case 2]***

While the above reflection suggests that DCST authority was partly constrained by the policy's expectations of their role, certain DCST members differentiated their role from existing quality improvement actors (such as the PHC coordinators) as less managerial/administrative and more clinical.

> *"I am not an implementer but I reinforce implementation of the guidelines but not [in an] administrative role" [DCST case 3].*

This also suggests that while DCST clinical governance role ideally should involve the different forms of role expressed, DCST are articulating the need for a limited role in administrative processes.

Understanding the path towards role adaptation

Context of implementation

Until the introduction of the DCSTs, there was no clearly differentiated or exclusive clinical governance role at the DHS level; hence, the adjustment (by individuals and the system) to this new team is unprecedented. In our study, the district context shaped how intended beneficiaries adjusted to this new

DCST role. In particular, the geographical accessibility of District 1 and the deeply rural location of District 3 emerged as important in the recruitment and retention of DCST members. For example, the rural study site saw DCST implementation as a potential source of skilled personnel because *"it's not easy to attract doctors or specialists" [DM Case 3].*

In all three sites, which struggle with human resource shortages (compounded in each by provincially imposed moratoria on their recruitment strategies), the addition of new specialists was welcomed; an enabling factor in the adjustment to the DCST role. However, in practice, for some intended role beneficiaries, there was a mismatch between actual and expected roles. We use stories of DCST members from each of the three study sites to illustrate the process of adjustment to this new role in clinical governance (Boxes 1, 2 and 3). When read together, they show the interplay between the existing quality improvement system, the history of members of the role sets, the nature of the DCST innovation, and coping mechanisms adopted in the process of adjusting to a new role. These enable the identification of aspects of local context in all three cases.

Story 1 (Box 1) draws attention to a typical DCST approach to clinical governance (observed in all three cases) with DCST activities ranging from identification of system gaps and provision of relevant support (clinical and operational) to management of relationships. This story also reveals challenges of human resource shortages in service delivery (also suffered by all three districts).

Box 1: A day-to-day role

"…As we analyse and support the system in terms of human and material resources...we do get defensive facility managers despite that sometimes we don't announce our visit and we want to see things as they are (to avoid them getting linen or borrowing equipment for clinical assessment with advance warning). So we just do what we need to do and give the necessary feedback …....We know that existing personnel are trying their best but they are hitting a rock especially in terms of human resources…their functioning is haphazard". [DCST Case 3]

The context of an existing quality improvement system

A number of constraints emerged as influencing the 'haphazard' functioning of the existing quality improvement system which seems to have persisted since the introduction in 2001 of a PHC coordinator role in facility supervision. Firstly, in each of the sites, there was a shortage of PHC coordinators in relation to local needs for facility supervision, as well as transport constraints (in one district), coupled with increasing workload imposed by other national initiatives. For all actors, these constraints set limits on the coverage of supportive supervision at facility level. The perceived limited coverage of PHC coordinators to provide clinical supervision may also be partly due to the multiple, unintegrated supervision tools that were seen as duplicating and time-consuming. For example, quality improvement tools used for the ideal clinic concept and the national core standards for quality are perceived to *"look for the same thing"* but require different forms and assessments *[PHC coordinator case 2*].

Yet, many of the DCST members are of the opinion that middle management actors with quality improvement responsibilities have insufficient clinical capacity. However, this perception was expressed with caution: firstly, because PHC coordinators are seen as enablers to the DCST role and the system, doing *"more than supervision she's more like a mother to the team" [DCST Case 2]*. Secondly, because

some of the DCST members expressed empathy and concern about the constraining environment in which PHC coordinators had to function and felt well positioned to *"influence systems and improve clinical skills" [DCST case 1].*

History of role players in the system

Amongst DCST team members, we found (i) those who were new to the district; and (ii) those who had taken up the new role from another post within the district. In all three study sites, most of the DCST members had been employed from within the district.

Box 2: Changing role within the health system
I used to be a PHC coordinator [and had to take on the role of coordinating the new ward based outreach team of community health workers] Then I got this DCST post……[But] people automatically had this view that I am moving now to the district to coordinate the ward based outreach teams. That is where the confusion came in… but I stood my ground that I have other responsibilities… [DCST Case 2]

In story 2, the promotion of a PHC coordinator from within the district into a DCST position (Box 2), reveals the influence of history in shaping expectations and behavior about the new role. Her first-hand knowledge of existing quality improvement activities in the district enabled a quick emergence of role in clinical governance. However, her knowledge of system challenges, as well as relationships between members of the quality improvement role set and their expectations of her, contributed to role conflict and strain.

Nature of innovation

The multidisciplinary nature of the DCST and the differences in role across the key specialties (Family Medicine, Paediatrics, Obstetrics and Gynaecology), also influenced the expectations and behaviour of members within the quality improvement role set. For DCST participants in all three districts, there was a fair level of consensus and clarity about the role of those in paediatric and obstetric care; however, the roles of the PHC nurses and Family Physicians were more difficult to understand or link to broader system goals (Box 3). There were expectations that the PHC/Family Medicine roles should inclusively tackle all issues at PHC level, resulting in a slower pace of role adaptation when compared to the other specialties within the DCST:

> *"You have a PHC trained Nurse and Physician; what are they doing about other diseases? Diabetes and… Chronic disease…" [PHC coordinator case 2].*

Coping mechanisms

Across the study sites, leadership and support from mentors were important in facilitating DCST members' adjustment to their role. Mentors were found within institutional structures (such as Family Medicine departments, Universities, NGOs), or at an individual level (a senior clinician within the university linked to the district). In their individual and institutional capacities, these mentors played a crucial role in establishing the team, facilitating spaces for DCST members, and providing ongoing support for their integration into the district health system. The story in Box 3 suggests processes used in defining and communicating the new DCST role which assisted team members in clarifying role expectations.

Box 3: Clarifying role expectation

""We had a meeting with role players the CEOs and the HODs, hospitals and MCWH and district team. We were introduced formally and we presented our specific expectations and roles so that they can be clarified. Therefore, that has built most of the relationships so that everybody could feel and see the importance; that we are not here to step in other people's posts. …. I think that helped a bit… they knew that we are not coming to police them or to find faults". [DCST Case 1]

The personalities, communication style, and relationship skills of focal persons within the quality improvement role set also contributed to the promotion of either cooperation or conflict and strain in the role.

> *"[Staff at the clinic think] Oh, she's coming to [look for] wrong things. And when I go inside and greet them with a smile and I introduce myself… then they settle down" [DCST Case 1]*.

An ability to communicate clearly, with willingness to listen to others and a passion to influence change in the system emerged as key traits for successful role adaptation. Furthermore, role players acknowledged the importance of 'time', and with this, experience and a growing familiarity with the DCST role, as factors facilitating role adaptation.

Discussion

Flexible role boundaries

Our analysis of different actors' responses and ways of adjusting to the new DCST role reveals continuous processes of role differentiation and role adaptation at different levels of the district health system. Given the potential for complementarity between the DCST and the sub-district level managers, as well as top management levels in quality improvement, this research indicates that a system wide-approach to clinical governance has potential to promote positive change [1]. As visualised in policy, their cross-cutting role positions the DCSTs to implement clinical governance by involving individuals and teams across the district system [1, 3]. In practice, however, the early stage resistance of intended beneficiaries of the DCSTs also highlights certain challenges experienced when introducing an innovation [7]. In addition, roles which have multi-level effects or boundary spanning functions within a system, as is the case of the DCSTs, often expose conflict and stress [33] as a result of competing demands among actors [30, 34].

The range of activities undertaken by DCST members individually and as part of a team reveals clinical, managerial/operational, and administrative dimensions of clinical governance. Performing these dimensions requires professional autonomy and flexibility in the role while also acknowledging the complementarities of members of the role set. Our findings suggest that the flexibility necessary for the DCST role requires some degree of discretion in decision-making but may also influence the perceived dominance of one role (the DCST) over another (for example PHC coordinator) in clinical governance. Having a flexible role in this context may also suggest a tendency to erode the boundaries of related roles. However, as has been noted in other clinical governance settings, the integration between structures and processes is still fragmented [10] including people and the roles they hold.

Effects of role strain

The role strain expressed in quality improvement processes reveals some of the systemic factors influencing role adaptation, such as human resource shortages and skill gaps and irregularities in practices and routines for supporting service delivery. But, do the strains or conflicts observed in the process of role adaptation lead to beneficial effects or otherwise? Evidence of interpersonal differences and coping mechanisms, leadership, and accountability are central in the process of DCST role adaptation to the benefit of the wider system. Conversely, across the course of our study, accountability concerns emerged in the reflections of actors and shaped role conflict. Here, elements of 'blame' emerged, with the PHC managers 'blaming' DCST members for not communicating or accounting for their involvement in clinical governance. Such concerns about 'blame culture' have also been reported in clinical governance experiences in other settings [3, 5]. Different examples of role sending, challenging of the existing quality improvement system, and adjustment to the new DCST role were seen amongst DCST team members themselves and between DCSTs and others. These processes, expressed through role ambiguity and conflict, reveal challenges within existing quality improvement process. While capacity building and an increase in the number of PHC coordinators may address some of these challenges, role ambiguity and conflict also alert the system to the importance of attending to 'software' issues of agency and accountability [9]. Further investigation into the influence of implementation management in integrating roles may thus be useful. In addition, such implementation management processes may form part of a 'facilitative, developmental and supportive process' that will encourage a sense of ownership, trust and voluntary engagement for promoting quality [3].

Feasibility of role consensus amidst alternatives

The limited shared understanding about clinical governance in many settings [6] should be given renewed priority to help reduce ambiguity between leadership, accountability, and integration of roles. In the execution of roles, DCSTs are highly connected to all parts and levels of the district health system, fostering collaboration, exercising leadership, and building capacity through mentorship. The DCSTs' continuous engagement with other role players is creating spaces for adjustments to role despite the role ambiguity and conflicts observed. However, a comfortable level of role consensus for quality improvement may not be reached, [28] because of the high level of discretion required to undertake clinical governance. Our findings support Turner's assumption that the most important process in stabilising a (new) role within a system is role adaptation rather than consensus [28]. Even with the high level of consensus about the value added to clinical supervision by the DCSTs, the presence of already-existing quality improvement role-players as apparent alternatives (role of PHC coordinators for example) could challenge role consensus. This further underscores the importance of implementation management systems. Although appointed DCST mentors may be able to partially fill this gap, there is still a need for an integrated approach to clinical governance in different settings. In introducing new roles and in the process of managing human resources for health care, careful consideration for inter/intra role analysis should be factored into the planning, roll-out, phasing, and monitoring of innovations to reduce erroneous and ambiguous expectations about roles.

The impact of context on role adaptation

By comparing insights across the three sites, we intended to identify some of the contextual factors influencing the implementation of a DCST role. Yet, while the process of role adaptation might be

expected to settle more quickly in contexts where DCSTs have a higher team member complement and more resources to operate, in our study, district context did not seem to exert much influence over how actors were adapting to this new role. However, in all three sites, there have been small, yet positive changes in key health indicators overtime despite geographical and human resource constraints (including varying degrees of success with recruiting DCST members in each). For example, between 2013/14 and 2015/16, maternal mortality ratios and stillbirth rates declined marginally in the more urban Districts 1 and 2, than deeply-rural District 3 [44]. However, the link between DCST activities and the observed improvements in some of the maternal and child health indicators have not been established. We point to the importance of a comparative case study approach in helping to highlight this. Therefore, there are implications for role expectations and behaviour given that the extent of DCST coverage is dependent on the composition of the team itself, as well as beneficiaries complementing their work. Future analysis of the DCST's actual activities may help, to further understand where they are making an impact and how?

It is noteworthy that there was similarity in how intended beneficiaries articulated their expectations of the DCST role in clinical governance although the perceived role conflict observed varied in intensity across sites. In the three study sites, DCST members had similar expectations about what their role should be. This may be due to their standardised induction into the role, a process that was led by the National Department of Health. While often different from DCST members' expectations, other members of their role set held similar expectations to each other about the DCST role. The differences in expectation and behaviour about the DCST role across sites were not as evident as differences between actors (DCST members versus others). Given the ongoing developments in quality improvement policy and the potential for additional new programmes to target quality, further formative evaluations are important for assessing the receptiveness of the system to change, pointing to the continuing relevance of the theory of change.

The contribution of a theory of change approach

Methodologically, therefore, the theory of change approach helped actors to reflect on their expectations and experiences of the DCST role in clinical governance. It also provided space for dialogue by bringing together different actors to explore role differentiation. Further, this method influenced the dissemination of stories of positive role adaptation. In our view, sharing of actors' reflections over time and across sites helped role players to think about how to improve implementation within their local contexts. Theory of change also complements concepts of role theory and how the idea of 'role' supports the perspectives and experiences of actors presented in this study. There is bearing in further explanatory research that can further verify the applicability of 'role' in other settings to understand other explanatory factors in the implementation of change.

We acknowledge the limitation of not being able to further monitor the DCSTs' integration process into the district health system due to the study period. In the course of our study, some changes could be observed in DCST role adaptation, particularly a growing sense of normalisation and familiarity with the role, and with this, less ambiguity. However, the passage of time itself will contribute to whether the status quo is reinforced or shifted over a long-term evaluation.

Conclusion

The implementation of DCSTs into the DHS has broadened South Africa's 'specialist' human resource base at primary care level. This new role offers an opportunity for internal system diagnosis and has potential to support the realisation of global goals such as the MDGs and SDGs [13]. However, our study suggests that the adjustment to the DCST role within an existing quality improvement environment is not

necessarily automatic. Rather, problems in policy design may bring role ambiguity and conflict, due to limited clarity about reporting and accountability lines (here, cascading from the DCSTs downwards in the DHS structure). In our study, this was partly explained by the flexible role boundaries in quality improvement, the negative effects of role strain, the difficulty in achieving role consensus due to the apparent alternatives for quality improvement, and the impact of context on role adaptation. Additionally, role conflicts in implementation may have been curtailed if there had been more effective communication between implementing actors. Conversely, processes of role questioning and understanding are crucial for driving system responsiveness to change [28]. We support previous assertions that healthcare organisations should not be seen as machines but as densely connected webs of interacting role players, each operating based on beliefs, local knowledge and interests [25].

The introduction of the DCST role into districts has seen the redirection of specialist roles from a hospital-based approach to an 'inclusive' PHC approach. However, PHC as a level of clinical governance within the South African health system is still undergoing transformation. In preparation for the country's National Health Insurance system, the structure of the district health system is changing. Districts are also responding to innovations and demands because of changing disease patterns and challenges in human resource structure. Improving quality requires anticipating and addressing shortage of inputs for health care delivery and careful integration of healthcare policy guidelines. There is a need for implementation management monitoring that will reinforce the complementary potential of clinical governance within district healthcare. The new clinical governance role of the DCST can help in ensuring quality in service delivery in order for South Africa to move its human resource strength towards universal health coverage.

Abbreviations

DCSTs: District-based clinical specialist teams; PHC: Primary Health Care; District Health System (DHS)
UNITAS: Universal Health Coverage in Tanzania and South Africa: monitoring and evaluating progress.

Declarations

Ethics approval and consent to participate

The UNITAS study was granted ethics clearance by the University Research Ethics Committees of the three partner institutions [HREC REF: 255/2013, Clearance certificate No: M140528, REF: BE197/13], who were responsible for data collection in each district of study. A separate ethics clearance was also secured for the doctoral research being presented (Clearance certificate No. M140623). Additional study approval was secured from the three provincial and district departments of health in which the study was carried out. Participants provided written informed consent for participation in the study.

Consent for publication

Not applicable

Availability of data and material

Data and material for this study cannot be provided publicly due to our ethical obligations to protect the anonymity of participants. As stipulated in the participant "Informed consent form", data access is limited to members of the UNITAS research team. Data cannot be shared due to this restriction. For further information related to the data, please contact the corresponding author.

Competing interests

The authors declare no competing interests.

Funding

The research (UNITAS project) leading to these findings received financial support from the European Commissions' Seventh Framework Programme (FP7-CP-SICA grant number 261349) and the South African Department of Science and Technology (DST). KO also acknowledges the financial support of the South African National Research Foundation (NRF) and JE the South African Research Chair Initiative (SARChI) in Health Policy and Systems Research (Centre for Health Policy - Wits). These funding bodies did not in any way influence the design, conduct, analysis or writing of this study**.** Furthermore, these funders do not necessarily share the views expressed in this paper.

Authors' contributions

KO, BH, JG and JE all made substantial contribution to the conception of this research. KO was responsible for data analysis and drafting of the manuscript. All authors provided inputs over the revision of drafts and all approved final draft.

Acknowledgements

We are grateful to all our participants in the three NHI pilot districts for the time they invested in the UNITAS project. We also appreciate the contribution of our colleagues at the Health Economics Unit, University of Cape Town; Di McIntyre, Lucy Gilson, Marsha Orgill, Maylene Shung King, Ermin Erasmus, Ayako Honda. At the African Centre for Population Studies, University of KwaZulu Natal many thanks to; Natsayi Chimbindi, Janet Michel and Thubelihle Zitha. In addition, we acknowledge Dr. Wezile Chitha and Lwazi Sikuza.

Authors' information

Not applicable

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CHAPTER 7: RESEARCH PAPER 3

Based on the third objective: “to examine in-depth, the institutional-level functioning of DCSTs in one district”. This submitted manuscript builds on research paper 2 by going beyond the assumptions and experiences of the DCST role to exploring, in-depth, the actual activities reported in one district looking at the clinical governance practices of the team, its institutional function and how this manifests in service delivery. Guided by a conceptual framework on institutional entrepreneurship (IE), the activities of the DCST between 2013-15 were reviewed and analysed using documents and interviews. In particular, IE concepts such as announcers of reforms, advocacy for change, mobilising and reorganizing resources, facilitating platforms that promote the retention of knowledge and exerting power and influence are explored. Paper expected to be published by November 2019

OXFORD UNIVERSITY PRESS | Health Policy and Planning

Can institutional entrepreneurship strengthen clinical governance and quality improvement: A case study of a District-based Clinical Specialist Team in South Africa

Journal:	*Health Policy and Planning*
Manuscript ID	HEAPOL-2018-Dec-0703.R1
Manuscript Type:	Supplement Article
Country of Expertise:	South Africa
Keywords:	governance, health care reform, health policy, health sector reform, policy evaluation, health systems research

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Abstract

We present an interpretive qualitative account of micro-level activities and processes of clinical governance by recently introduced district-based clinical specialist teams (DCSTs) in South Africa. We do this to explore whether and how they are functioning as institutional entrepreneurs (IE) at the local service delivery level. In one health district, between 2013 and 2015, we carried out 59 in-depth interviews with district, sub-district and facility managers, nurses, DCST members and external actors. We also ran one focus group discussion with the DCST and analysed key policies, activities and perceptions of the innovation using an institutional entrepreneurship conceptual lens. Findings show that the DCST is located in a constrained context. Yet, by revealing and bridging gaps in the health system, team members have been able to take on certain IE characteristics, functioning – more or less – as announcers of reforms, articulating a strategic vision and direction for the system, advocating for change, mobilising resources. In addition, they have helped to reorganise services and shape care practices by re-framing issues and exerting power to influence organisational change. The DCST innovation provides an opportunity to promote institutional entrepreneurship in our context because it influences change and is applicable to other health systems. Yet there are nuanced differences between individual members and the team, and these need better understanding to maximise this contribution to change in this context and other health systems.

Introduction

Improving the quality of health care is a key priority for many health systems and this is guiding innovative practices (Hirschhorn et al, 2013). Improving the quality of health care itself can require changing or increasing material inputs as well as changes in norms and practices especially in underperforming health systems (Thomas and Grindle, 1990, Hirschhorn et al, 2013). Yet implementing change is challenging and may not be straightforward due to the multiple actors, systems and processes involved, as well as the difficulties of transforming already-established, 'stubborn' practices (Thomas and Grindle, 1990, Chambers et al, 2013). Given that quality improvement often requires both reform and sustaining good practices (Dibella, 2007), it is important to understand how those responsible for the governance of quality of health care drive and sustain change (Stetler et al, 2009).

In the organisational science and management literatures, 'institutional entrepreneurship' enables and sustains change in an organisation (Lawrence et al, 2009, Maguire et al, 2004, Greenwood and Suddaby, 2006, Garud et al, 2007). It describes the role of certain actors (i.e. institutional entrepreneurs - IE) and how they are able to shape norms and change practices by navigating structures and systems as well as leveraging resources within an organisation (Tracey et al, 2011, Dorado, 2005). In health care systems, institutional entrepreneurship can strengthen the governance of clinical care (Maguire et al, 2004); however, the field is currently under-researched (Best et al, 2012, Nyström et al, 2014).

This paper brings an institutional entrepreneurial lens to South Africa's recently introduced district-based clinical specialist teams (DCSTs). Working at a district-level, DCSTs are intended to improve maternal and child health (MCH) outcomes and to create processes and structures for ensuring quality of health care (National Department of Health, 2012a). They are tasked with implementing clinical

governance – an approach that helps "move health care delivery from an organisational magic bullet of single strategies" (e.g. professional education, audit or risk management) to a systematic combination or joining up of range of strategies to improve and sustain quality of health care (Phillips et al, 2010). Clinical governance is an organisational-level (e.g. national, provincial or district/local) quality improvement strategy (Campbell and Sweeney, 2002), but its scope and definition remain debatable and evolving (Braithwaite and Travaglia, 2008). Its components include: (i) advocating for positive values and attitudes, (ii) planning and organising governance structures (iii) organising and using data and evidence and (iv) sponsoring a patient focus - strategies that ensure rights and involvement of patients. (Braithwaite and Travaglia, 2008). Further, Travaglia et al (2011) add the importance of strengthening links between the governance of clinical and corporate health services. Table 1 outlines broad clinical governance-related topics and their corresponding elements. Yet, not all components manifest at a given time and setting. For example, key elements involved in sponsoring a patient focus is not a focus in this paper.

Table 1: Clinical governance related topics and corresponding elements

Clinical governance elements for promoting safety and quality	**Advocating for positive attitudes and values**	**Planning and organising governance structures**	**Organising and using data and evidence**	**Sponsoring a patient focus**
	Accountability	Managing performance	Improving the sharing of information	Encouraging patient participation
	Continuous improvement	Managing risk	Encouraging clinical effectiveness	Focus on patient safety
	Qualified privilege	Reporting and managing critical incidents	Promoting evidence based practices	Supporting open disclosure
	Quality assurance	Credentialing medical practitioners	Using clinical indicators	Obtaining patient consent
	Continuous education	Applying standards	Using audit	Dealing with complaints effectively
	A focus on ethics	Participating in accreditation process	Managing knowledge effectively	

Adapted from Braithwaite and Travaglia (2008) and Travaglia et al, (2011).

IE can play a crucial role in clinical governance because they can promote the internalisation of innovative ideas and practices through skills, knowledge and experiences (Tracey et al, 2011, Dorado, 2005). Since the introduction of DCSTs in 2012, evidence of DCSTs' change promoting activities have been reported in the innovation of key service delivery improvement initiatives (Feucht et al, 2018), on the impact of labour ward respectful care (Oosthuizen et al, 2018), in programmes such as the Kangaroo Mother Care (Feucht et al, 2016), the Perinatal death reviews (Rhoda et al, 2014) and through a national review (Baumann, 2015). Yet, there is limited evidence of a combination of DCSTs' change promoting activities.

We present an interpretive account of micro-level clinical governance activities and processes (involving district-level interactions among frontline providers, managers and a DCST) to understand DCST functioning and influence. We ask whether DCSTs are IE and if institutional entrepreneurship is useful in strengthening clinical governance?

Understanding success in quality improvement approaches

Quality improvement involves systematic data-driven activities designed to bring about immediate or sustained positive change in the delivery of health care (Kaplan et al, 2010). The term "quality improvement" spans initiatives ranging from activities targeted at particular system outcomes or processes (such as reducing waiting times, facilitating provider exchange of clinical data (Kaplan et al, 2010) to applying specific tools and methods (e.g. Plan-Do-Study-Act (PDSA (Kaplan et al, 2010, Taylor et al, 2013, Coury et al, 2017) or Diagnose-Intervene-Verify-Adjust (DIVA) (Eboreime et al, 2018)) for total quality management (Douglas and Judge JR, 2001, Mosadeghrad, 2014) continuous quality improvement (Kaplan et al, 2010, Brennan and Flynn, 2013) and clinical governance (Phipps, 2017, Travaglia et al, 2011, Phillips et al, 2010, Campbell and Sweeney, 2002).

Alongside the technical dimensions of scale and focus, context has also been identified as important to the success (or not) of a quality improvement initiative/innovation (Kaplan et al, 2010, Brennan and Flynn, 2013, Kaplan et al, 2012). Context can involve anything that is not directly part of a technical quality improvement process such as characteristics of the organisational setting, the environment, individuals and their functions in the organisation (Kaplan et al, 2010). Yet, there is inconsistent knowledge on how specific or general quality improvement initiatives or approaches influence outcomes across settings (McDonald et al, 2013, Kaplan et al, 2012). Hence, the need to understand other factors that drive change.

Institutional change, Entrepreneurship and Institutional Entrepreneurship

Institutions are established rules, norms, values and practices that serve as a basis for determining the appropriate level of action (Hoffman, 1999, Greifs, 2006, Garud et al, 2007). Institutional change is a stage where new ideas and practices (i.e. innovations) attain commitment, compliance, identification and internalisation (Armenakis and Harris, 2009). Actors are crucial in institutional change but they also require certain skills and competencies. Entrepreneurship is the professional application of knowledge, skills and competencies for introducing or monetising new ideas and practices (Veeraraghavan, 2009). However, monetisation may not be the focus of public sector practices and it is not a focus in this paper. Further, while entrepreneurship may also be associated with risk-taking (Veeraraghavan, 2009), this may not necessarily manifest in the delivery of healthcare, although risk management does (Hage, 1999, Townley, 2002). Institutional entrepreneurship relates to how actors use their agency – that is the creativity that guides behaviour (Brinkerhoff, 2016, Hargrave and VaN de Ven, 2009) - to facilitate change while working from and with existing complexities and path dependencies within an organisation (Garud et al, 2007, DiMaggio, 1988). Tracey et al (2011) outlined four key elements of institutional entrepreneurship: (i) being a political process, (ii) strategic use of symbols to create meaning, (iii) legitimacy (i.e. actions based on norms, beliefs and definitions); and (iv) proactive development of strategies for attaining legitimacy. In addition, institutional entrepreneurship relies on motivation (what drives actors) because motivation mediates between the organisational environment and behaviour (Greifs, 2006). Actors' motivation may manifest in their status, position and power in an organisational hierarchy and can support or constrain change (De Souza Bermejo et al, 2016, Brinkerhoff, 2016, Dacin et al, 2002).

Characteristics of IE

IE are organised actors (Lawrence et al, 2009) who have social and political skills to harness opportunities (Veeraraghavan, 2009, Maguire et al, 2004) leverage resources (Lawrence et al, 2009) and strategically enable change in institutions (Heaphy, 2013). Their skills enable them to facilitate buy-in for change (Rao et al, 2000). While skills can drive entrepreneurship, these are not sufficient for promoting change alone as institutional processes may constrain the functioning of actors. But IE are expected to emerge beyond the limitations in organisational arrangements and assume agency (Dacin et al, 2002, Tracey et al, 2011). IE also possess internal capabilities - a potential factor for driving organisational innovation (De Souza Bermejo et al, 2016). Internal capabilities include characteristics that can promote innovative ideas and practices such as ways of framing (Maguire et al, 2004, Greenwood et al, 2002), facilitating routines that promote retention of knowledge and managing the interconnectedness of service delivery or innovation elements (De Souza Bermejo et al, 2016). IE lead efforts to identify (political) opportunities (Rao et al, 2000) or serve as as announcers of institutional reforms and networked actors (Brinkerhoff, 2016). IE work as individuals or as a collective (Rao et al, 2000, Maguire et al, 2004, Lawrence et al, 2009) and within a collective there is tendency for variation in institutional entrepreneurial capabilities because of the differences in actors' capital or resources (knowledge or experience or material) that are needed to exert power over their environment at a given point in time (Maguire et al, 2004). As a collective, therefore, some actors may be dominant (Maguire S et al, 2004, Garud R et al, 2002).

In this paper, it is important to acknowledge that individuals who influence change have been variously termed champions (Rhoda et al, 2014, Miech et al, 2018), institutional agents (Scott, 2008), change agents (Battilana and Tiziana, 2012) , opinion leaders (Flodgren et al, 2010), knowledge brokers (Kislov et al, 2015) and boundary spanners (Llewellyn, 2001, Nissen, 2010). The use of IE in this paper is used to highlight a 'whole system' actor role in influencing institutions and change processes. While entrepreneurial skills and competencies may vary between constituent elements or overtime, IE is used here to profile a variety of organisational strategies used in clinical governance activities to influence change.

DCST innovation and institutional entrepreneurship

In 2011, as part of an effort to meet the millennium development goals (MDGs) for MCH and promote universal health coverage, South Africa introduced a team of district-based clinical specialists (DCSTs) to implement clinical governance (Republic of South Africa, 2013). A complete DCST comprises three discipline-specific dyads or pairs of doctors and nurse specialists: Family Physician- PHC nurse, Paediatrician - Paediatric nurse, Obstetrician - Advanced midwife, with an Anaesthetist comprising the seventh team member (Ministerial Task Team Report, 2011).

At individual and collective levels, each DCST is expected to help improve MCH services and the quality of health care (National Department of Health, 2012b, Republic of South Africa, 2015). Table 2 illustrates their prescribed functions within a collective responsibility for clinical governance which should ideally support programmes and initiatives that influence MCH services complementing the vision to achieve the MDGs and universal health coverage (Ministerial Task Team Report, 2011, Republic of South Africa, 2015). Full details of DCST performance indicators are available in the DCST policy report (Ministerial Task Team Report, 2011).

Table 2: Prescribed Individual DCST-member function

DCST innovation by discipline	DCST members	Function
Family Medicine	Family Physician	• To target the non-hospital district level services in community health centres (CHC), primary health care (PHC) clinics and outreach services (i.e. community and school health teams)
	PHC nurse	
Obstetrics	Obstetrician	• To enhance the quality of maternity services
	Advanced midwife	
Paediatrics	Paediatrician	• To improve neonatal, paediatric and child health services
	Paediatric nurse	
Anaesthetics	Anaesthetist	• To improve peri-operative care and emergency services for adults, pregnant women, newborns and children

Source: DCST Ministerial Task Team Report (2011)

The introduction of DCSTs points to an organisational change in South Africa's approach to quality improvement from a facility supervision strategy spearheaded by middle-level managers (mostly with nursing background) to a clinical governance strategy-involving doctor and nurse specialist-members. While clinical governance is not new to the South African health system given the existing PHC facility supervision strategy (National Department of Health, 2009, Oboirien et al, 2018), DCSTs are now responsible for implementing the policy on quality in health care at the district level. Figure 1 illustrates the potential path of change the DCST innovation is likely to take in achieving its goal.

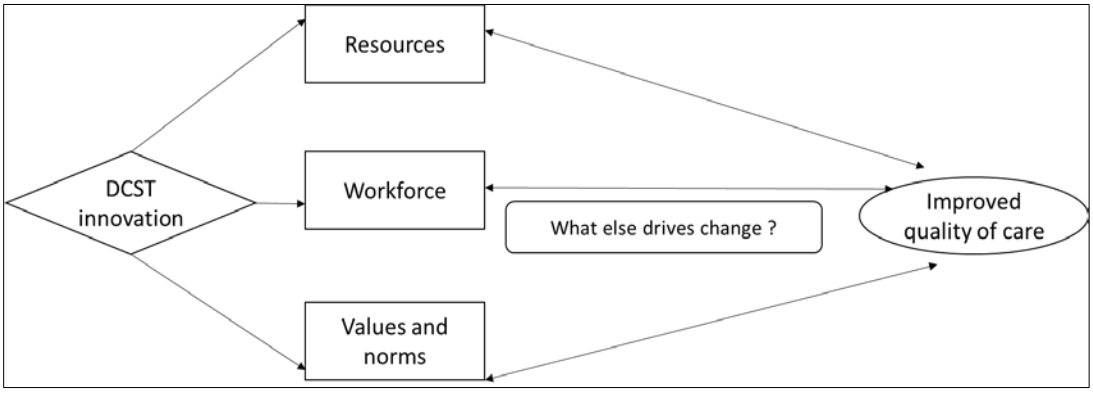

Figure 1: Potential path of change for DCST innovation

DCSTs are expected to draw on available resources (within institutional structures such as PHC clinics and district hospital), workforce and established norms and values to improve quality of health care.

Resources and workforce (e.g. actors) available for quality improvement are located across multiple programs and reforms. However, creating a team for quality improvement to enhance DCSTs' clinical governance role in some settings have been shown to influence role conflict (Oboirien et al, 2018).

Nevertheless, within the policy imperative for DCSTs to exercise their clinical governance function, there was a national-led recruitment that took into consideration skills, competencies and work experience of prospective members (Ministerial Task Team Report, 2011). Competencies include sound knowledge of area of practice, managerial and professional skills, team working and behavioral attributes such as stress tolerance, objectivity, responsiveness, orientation towards quality, ethical conduct and self-confidence (Ministerial Task Team Report, 2011). Once DCSTs were recruited in 2012, a national induction and orientation programme was carried out (Monticelli, 2014, National Department of Health, 2012a). Yet, there have been challenges with their early implementation, including incomplete DCST complement leading partly to perceived limited coverage in providing support, resignations and difficulty in attracting specialists to rural districts (Voce et al, 2014, Oboirien et al, 2015). These may influence DCST functioning and how they are likely to guide change. Furthermore, there are common district-level challenges nationally that have influenced quality improvement processes in all of the country's 52 districts, including the three where the DCSTs have not been rolled out. This include human resource shortages, inadequate equipment and emergency medical services, limited staff motivation and capacity (Baumann, 2015).

Methods

We present an interpretive qualitative case study (Creswell and Poth, 2011, Yin, 1994) of a DCST innovation in one health district in South Africa. Between 2013 and 2015 using in-depth interviews (IDI) and a focus group discussion (FGD), we explore DCST activities and experiences of their functioning. In reporting these experiences, we draw on the consolidated criteria for reporting qualitative research (COREQ) checklist (Tong et al, 2007).

Research team and reflexivity

The interests of the authors are in line with the overall aim of the UNITAS project: Universal coverage in Tanzania and South Africa: monitoring and evaluating progress. This is partly to monitor and document the DCST innovation within the context of broader reforms to achieve universal health coverage in South Africa.

The research team are all equipped in health policy and systems analysis, three having a PhD in Public Health with at least over a decade of experience in evaluation of health policy reforms, while the first author is also working towards completing a doctorate degree in the same field of study. All members of the research team were involved in the data collection, where at least one of the co-authors and the first author are part of the in-depth interviews at any given time. To this end, while our collective experience in public health and health systems research meant we were familiar with the DHS and policy process surrounding the implementation of the DCSTs, none of us have clinical training and we were thus 'outsiders' (Dwyer and Buckle, 2009) in light of the expertise of the DCST team members. Our outsider status was further highlighted by our visits from 'out of town'. This status enabled us to seek clarity around technical/clinical components of the discussion and served as a useful prompt for people to describe taken-for-granted knowledge (Dwyer and Buckle, 2009). This is a particular strength in light of the different disciplinary roles within teams.

The research team familiarised themselves with DCST policy documents to help engage with participants during the interviews and FGD. The authors had no prior engagements with the participants before the

commencement of the study. However, the first author after the commencement of the study established relationship with the DCST as part of a relationship building and ongoing engagement as a key component of the iterative data collection-analysis-data collection process. This further enabled the flow of information about activities and relevant documents required (such as DCST quarterly reports) and presentations. Further, preliminary analysis of the FGD informed the second round data collection. This enhanced the interpretive approach to the evaluation process (McCutcheon and Jung, 1990, Carr, 2006).

Research setting

Our case study is one of the 49 districts in South Africa with a DCST rollout. A district represents the lowest level within the national health system and is responsible for the management and delivery of health care within a defined geographical boundary (Republic of South Africa, 2011). We purposefully selected one district for an in-depth assessment of the DCST innovation. We then later chose a sub-district in the district because of the key informants' insights on DCST's frequent and regular engagement. All facilities in the sub-district were examined to understand DCST activities at the service delivery level.

Data collection methods

There are different phases of data collection for the DCST innovation. We reviewed key DCST-related policy documents and presentations and had access to district-level DCST reports that provided regular updates on activities. These documents helped us to identify and monitor patterns in DCST activities over the course of this study and to keep in touch with activities across other sites in South Africa.

We phased data collection so that each stage informed insights or feedback from previous engagements. The first round of data collection involved IDI with the district head and DCST mentor followed by a FGD with five members of the DCST. Further 27 IDI ensued through snowballing of actors identified as partners in clinical governance either by previous participants or as suggested by policy reports. This includes district, sub-district and PHC facility managers, external actors, district hospital managers (maternal and child wards), medical officers and nurses at facility level. IDI were repeated with the same categories of participants in the second round including DCST members.

Two interviewers took part in each interview to help capture all relevant details. These interviews were semi-structured and iteratively informed emerging issues, either through insights from previous engagements with actors or the review of documents. We tape-recorded and transcribed the interviews, which were password protected and accessible only to members of the research team. Researchers engaged with DCST members during the data collection process through different spaces - emails, telephonic discussions, and occasionally, chance encounters at other meetings or in public spaces.

Data analysis

Two studies have contributed to this analysis of the DCST using an institutional entrepreneurship framework. Firstly, Oboirien et al (2015), assessed the understanding of early implementation experiences of DCST - recruitment, resources and perceived limited coverage, showing high positive expectation of the DCST role to strengthen PHC. In addition, this paper identified existing capacity and systems, targeted collaboration and matching of expected roles to resources as contributing to the early integration of DCSTs into the district health system. Secondly, Oboirien et al (2018), analysed expectations and perceptions of the DCST role, including perceived role conflict. Authors reflected on

coping mechanisms such as leadership and support from mentors (at individual and institutional levels) to have helped actors adapt to the DCST role beyond role conflict while activities continue in different contexts.

In this paper, our analysis focuses on activities of the DCST and the manner and context in which the team has carried them out. Firstly, we carried out a document review of DCST-related policies to identify the team's prescribed clinical governance activities. In addition, we carried out a content analysis of DCST quarterly reports to capture the pattern of reported clinical governance activities. Secondly, guided by an institutional entrepreneurship framework, we identified broad themes from the FGD and IDI (Creswell and Poth, 2011) paying particular attention to concepts such as announcers of reforms, facilitating platforms that promote retention of knowledge, mobilising constituencies and resources, advocacy for change, issue-framing and promoting organisational change. Furthermore, DCST functioning was analysed at both a team level, given the team-based DCST policy design, and an individual-member level, given the potential for variations in entrepreneurial capabilities of each DCST member (Maguire et al, 2004).

Results

Our results show the characteristics of the DCST and describe elements of institutional entrepreneurship based on activities undertaken by the team and individual members.

Overview of DCST

The DCST in our case study district had a high team complement with all but the anaesthetist in post, i.e. six of the expected seven members and all female. The team was responsible for clinical governance in 45 health facilities (district hospital, community health centres and PHC facilities). Furthermore contextual factors such as (a) the presence of existing agents for clinical governance activities and (b) the manner in which DCST members were recruited contribute to the description of DCST in our study setting.

(a) Existing agents for clinical governance activities

There were two pre-existing agents within our study site already contributing to clinical governance, i.e. the family medicine department and PHC facility supervisors. The family medicine department was, and continues to provide clinical governance to the district through the placement of family physicians at the PHC level, the training of medical officers specialising in family medicine (registrars) and more generally for supporting PHC service delivery. Partly because of this existing arrangement, the district selected a DCST mentor within the family medicine department to oversee the integration of DCST in the district. The decision by the district management team to involve the family medicine department in the DCST implementation also had influence on the recruitment of some DCST appointees.

(b) Innovating clinical governance: Recruiting DCST members

The national and provincial departments of health led the recruitment of the DCST. For those in the district there was inadequate consultation:

> *"There were national adverts that none of us heard of and suddenly these specialists were appointed. " [District management member - IDI]*

Yet, the family medicine department also influenced recruitment and the DCST mentor advocated for a PHC-oriented approach, rather than one that was 'hospicentric':

> *"I managed to stop people that would actually have been very destructive in the team, for example, for eight years one specialist had not had time to participate in outreach activities [maternal audits] but wanted to be part of the DCST. Someone like that doesn't understand the system and it wouldn't have worked…." [District management member - IDI]*

This institutional entrepreneurial role was also displayed through the active headhunting of two DCST members as part of the district recruitment strategy. There was also a deliberate effort to bring together like-minded DCST members with shared understanding of clinical governance.

DCST: Elements of institutional entrepreneurship

Motivation for being a DCST

Table 3 illustrates previous work experience of DCST members and factors that motivated them to take up their respective positions. We found that four of the DCST members (the Paediatric and Obstetric dyads) had worked at the hospital level while those in the family medicine dyad were involved in district/sub-district level PHC functions.

Table 3: Characteristics of DCST members

DCST members	**Previous work**			**Job Motivation**	
	District/ sub-district level	**Hospital level**	**Involved in Management**	**Aligned with MCH goals**	**Other goals**
Family Physician	√			√	Discipline related – e.g. improve PHC management
PHC nurse	√		√	√	Linked to shared minister's vision
Paediatrician		√		√	Change driven – e.g. opportunity to learn
Paediatric nurse		√	√	√	Discipline related – Paediatrics, a fulfilling job
Obstetrician		√		√	Change driven – opportunity to work in a new environment
Advanced midwife		√	√	√	Discipline related – passion for maternal health

Source: Focus group discussion with DCST members and IDI with paediatric nurse (unavailable during FGD)

Each of the six DCST members had more than 10 years of working experience in their respective disciplines. Further, all members associated their motivation to join the team with wanting to address key MCH goals. In addition, two members also linked their motivation to their discipline-specific objectives and another noted the Minister of Health's vision for universal health coverage. Yet, there may be other sources of motivation beyond those expressed above, such as higher monetary benefits that is linked to such specialist cadre within the health system.

Providing multi-level support

Tables 4 and 5 broadly indicate how the DCST provided specialist opinion and mentorship on clinical care. At the district management team-level, the DCST functioned collectively and individually as consultants, by engaging with and supporting district and sub-district level managers.

> *"If there is something you want to initiate you can invite DCST and have a programme with them" [Sub-District management member - IDI].*

At the facility level, (Table 4) health professionals reported their provision of lower-level support on various health programmes, data and information systems, implementing guidelines, protocols, and facility audits. Yet, there were variations in the knowledge of health professionals about DCST activities. This is partly because some health care workers were new to the district or facility or were not working within MCH services in the facility, while some had met DCST members without identifying them as such. For example, a health professional only realised who the DCST was when we mentioned the names of team members, whom she knew as individuals. In addition, frequency of DCST visits, which ranged from monthly to quarterly engagements, and modes of engagement also varied from facility visits, phone calls, emails and engagements in workshops and trainings (Table 4). These differences may also have influenced variation in knowledge about the team and perceptions of their activities.

Table 4: DCST facility support reported by health care professionals

Facility	Cadre of health care provider	Knowledge of DCST	Frequency of visit	Mode of engagement	Details of activities
1	Facility manager	Yes	Last month	During visit or emails	Advanced midwife: Support with information and provision of guidelines
	Professional nurse	Yes, partly aware, knows advanced midwife		Workshop	Advanced midwife: Involved in the termination of pregnancy service in facility Delivered a speech for termination of pregnancy service
2	Facility manager	Yes	In 3 months	Facility visit (DCST make appointments)	Give in-service training and conducts audits Make appointment with DCST for facility support
	Advanced midwife	Yes	Last month	Phone numbers (but has not called for any support) Through facility manager	Trainings – Post-partum haemorrhage, breach delivery, neonatal resuscitation, shoulder dystocia, routine placenta, protein placenta and breastfeeding. Skill development, sharing of guidelines

	Professional nurse		Monthly		Paediatric and Obstetric dyads: Training and workshops on maternity
3	Facility manager	Yes	3 months ago	Facility visit	Discussion on protocol and guidelines Report on audit
	Professional nurse	Yes, partly aware knows advanced midwife		Monthly PPIP meetings	Provide guidelines and discuss district indicators
	Clinical nurse practitioner	Yes			Not clear of DCST activities and different programs through the national health insurance
4	(Acting) Facility manager	Yes	3 months ago	Does not have contact details	PHC Nurse: Checked pap smear results, identified patients for further treatment and initiation for training
	Professional nurse 1	NO			
	Professional nurse 2	No			
5	Facility manager	Yes	Over 6 months ago	Over 2-3 visits	Advanced midwife: Facility audit on equipment needs
	Professional nurse	No			
6	Facility manager	Yes			Check equipment, Verbal feedback on supervision visit
7	Facility manager	Yes aware of 4 members		PPIP meetings and maternal and child health meetings	Support facility for Mentor-Mothers programme, check delivery rates – challenges and audit maternity case records On-the-spot training or scheduled training
8	Facility manager	Yes		PHC meetings	Paediatrician: Information about new policies and guidelines
9	Facility manager	Yes, advanced midwife	In the last year		
Note: Activities reported are facility based and only for one of the four sub-districts in the study site.					

Furthermore, evidence of multi-level support is revealed through DCST quarterly reports which suggest over a three year period (Table 5) (2012/3, 2013/4 and 2014/5) 'routine' activities by DCST such as clinical audits, facility support (for example in delivering antenatal care to high-risk maternal patients), and in-service training were happening and were reported consistently. Moreover, we observed an increase in the coverage of certain activities. For example, in the operation of clinics for high-risk maternal patients, additional facilities had been initiated over time. Activities for supporting services varied and the DCST seemed to be accommodating programmes with existing support from non-

governmental organisations directed at improving MCH, such as Kangaroo mother care (2012/3), MoMConnect - registration for mobile text support to pregnant women (2013/4) and rollout of Mentors mothers' programme (2014/5). Although these cannot be disentangled from the broader national and global push towards improving MCH (consistent with a legacy of efforts towards MDGs 4 and 5), with these activities (Table 4 and 5), DCSTs have provided a useful resource, using IE to align different programmes aiming to promote change in MCH services.

Table 5: DCST Activities between 2012 and 2015 based on DCST quarterly reports

Functions	Specific activities	Examples 2012/13	Examples 2013/2014	Examples 2014/2015
System analysis and broad plan to combat MCH mortality	Clinical audits	Situational analysis in 10 facilities	Maternal mortality review	Neonatal death audits Maternal mortality review ongoing
	Development and revision of protocols	Checklist for Eclampsia, Emergency trolley, Patient Satisfaction tool designed,	Immunisation work plan, ART integrated register, Emergency trolley revised and aligned to National Core Standards, Roll-out of new ART guideline	Standard operating procedures for high risk clinics developed, district inter-facility transfer plan drafted
	Motivation for resources		Order and receipt of equipment	
	Input into District Health Plans			
Functioning as a team	Meetings	DCST weekly meetings		
District and Facility support and clinical work	Ward rounds and High risk clinics in MCH wards	Introduction of high risk clinics with Sonar services	High risk clinic introduced in one Community Health Centre	High risk clinic introduced in two additional Community Health Centres
	Assessment of protocol implementation	Child growth monitoring		
	Supporting services on:	Kangaro Mother Care, ARV clinics, six weeks postnatal clinics.	Maternity waiting homes established, Mother Baby Friendly Hospital Initiative status achieved (one hospital), Ante natal care electronic registration, HPV support in schools,	Placements of Oral Rehydration Solution corners in facilities, Roll-out of Mentor Mothers programme, supporting contracted doctors
	Mentoring on:	Partogram and Cervical screening		Ante natal care electronic registration
Collaboration, communication and reporting	Engagement with stakeholders	Introduction to the Minister of Health, District monthly and quarterly reviews, Maternal, Perinatal and Child mortality meetings, Patient Support Group	Clinical governance meetings with PHC coordinators, PHC reengineering meetings,	District pre-review and reviews, District conference, strategising with District health services Director and School Health Teams , collaboration with University Reproductive Health Unit, engagement with private providers on immunisation statistics
Training	In-service/on-site training	Essential Steps in the Management of Obstetric Emergency (ESMOE), Partogram, Normal labour birth, Multiple pregnancy, Cervical screening, ART initiation	Cervical screening , , Haemorrhage, Integrated Chronic Disease Management, Malnutrition guidelines, , referral protocols	New ART, TB and severe acute malnutrition guidelines
		Neonatal resuscitation, Birth Asphyxia, Integrated management of Childhood Illnesses	Severe acute malnutrition guideline	

Formal teaching and research	Development of quality improvement plans			

Source: Quarterly reports 2012/3 (1)[a], 2013/4 (3)[a], 2014/15 (1)[a].

Note: [a] *Denotes the number of available quarterly reports reviewed over each period for all the sub-districts in the study site.*

Announcers of reforms

Some members of the DCST performed as announcers of reforms because of their efforts to engage other actors with the institutional change agenda and through this, they were:

1. ***Articulating strategic vision and direction***

The DCST was engaged in awareness campaigns about health programmes and priorities, informed by both global and national-level priorities. For example during the early stage of DCST implementation, there was engagement with the Minister of Health in 2012/3, which influenced how they articulated health system goals to individual health workers in the district:

> *"We tell them [health care professionals] that internationally, these are the MGDs and in South Africa our minister said we need to have [six] priorities to assist us in reaching these MDGs and they are non-negotiable. " [DCST PHC nurse FGD]*

More so, the DCST mentor, working through the already institutionalized family medicine department, articulated future strategic direction by proactively identifying future priorities and areas of activity for the DCST:

> *"DCST are in the maternal, child and women's health spotlight, which is good but maybe other things are – communicable diseases (TB), chronic diseases and mental health are being sidelined"* [*District management member* - IDI].

2. ***Mobilising constituencies and sharing information***

To function as announcers of reforms, DCST members also needed buy-in from other actors to embrace the new clinical governance processes.

> *"We encourage management to sometimes invite PHC facility managers to district reviews so that they can see the benefit and give their inputs." [DCST- Paediatric nurse - IDI].*

Collectively, DCST attended district review meetings to promote and institutionalise the team's strategic vision and direction through various collaborative platforms (Table 6).

Table 6: DCST members' activities and platforms of engagement

DCST members	Specific member activities	Platforms of engagement						
		District Review Meetings	Management Meetings	PHC Reengineering Meetings	DCST Provincial Meetings	PPIP Meetings	Child PIP Meetings	PSG Meetings
Family Physician	Teaching, Research and mentoring					√	√	
PHC nurse	Presentations, workshops and Research	√	√	√	√			
Paediatrician	Mentoring and clinical care	√					√	√
Paediatric nurse	Presentations and workshops	√	√	√			√	
Obstetrician	Mentoring and clinical care				√	√		
Advanced midwife	Mentoring	√	√	√		√		

Note: *PPIP – Perinatal Healthcare Problem Identification Programme, Child PIP – Child Healthcare Problem Identification Programme, PSG – Patient Safety Group.*

Source: Focus group discussions and in-depth interviews with DCST.

For example, through a newly introduced collaborative platform (I.e. PHC reengineering meeting), the PHC nurse in the DCST is helping to address PHC related issues with relevant stakeholders, such as facility managers, MCH coordinators, school health teams, community health workers and programme coordinators. Table 6 also suggests that DCST engagement is primarily carried out through meeting attendance. However, it is important to recognise that each member of the DCST holds and attends discipline-specific meetings, bringing them directly into contact with those in their fields. In addition, meetings and workshops enable activities such as teaching and research. Beyond meetings, mentoring and clinical care (largely reported in DCST quarterly reports see Table 5) are most likely to be facility-based. Yet, DCSTs may gain from spending less time in meetings and more time on direct engagement.

Another way DCST mobilise constituencies and share information is at the hospital level. Some members of the DCST acted as mediators by helping managers communicate hospital level information to the PHC level especially about referral communication and practices, between different levels of care.

> *" If there are any issues, we communicate to the DCST head [DCST mentor] and she will then make sure that, it goes down to the different professional nurses in charge at PHC level" [Hospital CEO - IDI]*

Over the course of our study, the DCST mobilised other actors such as PHC coordinators in quality improvement activities. They also engaged strategically in the annual district health conference and with top management personnel, and collaborated with non-governmental organisations and the private sector. With this multilevel functioning, there is potential to bridge gaps within the district health system and its external environment.

Facilitating platforms that promote the retention of knowledge

Table 6 indicates (i) specific DCST-member activities and (ii) platforms where the team carried out some of their activities. Firstly, teaching and research activities (i.e. generating evidence through presentations and workshops), can reflect entrepreneurial capabilities and are useful in announcing reforms. In addition, mentoring and partaking in clinical care can help to facilitate routines that promote the retention of knowledge and quality of health care.

> *"DCST are very helpful… because for example, we used to have a problem with plotting the partogram chart but since they showed us how to complete the partogram chart we are now confident enough to deal with those things" [Professional nurse - IDI].*

Secondly, DCST members each reported being part of at least two collaborative platforms aiming to promote quality of health care. However, there were variations in the capabilities and scope of each DCST member to engage in specific platforms or promote the interconnectedness of service delivery processes. For example, Table 6 suggests that all DCST nurse-specialists were more involved in management-related platforms while all three doctor-specialists reported little or no engagement in these spaces. Doctor-specialists were more involved in clinically-oriented spaces such clinical audits and patient safety meetings when compared to nurse-specialists. Although the frequency of these engagements may not have been adequately captured, there was suggestion of a doctor and nurse specialist split in the functioning of the DCST.

> *"The nurses from all disciplines go to the PHC reengineering forum, so doctors are not part of that, they are invited to all our meetings but we are not invited to theirs. That's their exclusive meeting" [DCST – Paediatrician - IDI]*

The (perceived) separation of functions among doctor and nurse specialists suggests that qualification or position may provide opportunity for some DCST members to navigate certain constituencies while others are more constrained in overcoming established organisational processes.

Tools for navigating platforms

Although, only two DCST members reported on teaching, research and clinical care, all were involved in mentoring. Activities that generate and build knowledge may serve as tools for exercising institutional entrepreneurship. For instance, teaching and research can be a useful tool for infusing new values and practices and similarly routinising and sustaining them. In addition, presentations and workshops may

help actors disseminate their goals or activities, while also harnessing opportunities and identifying solutions that can promote change.

Two of the three nurse-specialists reported their involvement in presentations and workshops: platforms for the dissemination of health system goals and challenges. These activities also have the potential to promote collaboration due to the wide range of actors involved in those spaces. Our analysis suggests that the nurse-specialist members within the DCST may have more potential to be IE than doctor-specialists (Table 6). This is because of nurse-specialists' previous and current management responsibilities, current research, dissemination activities and broader platforms of engagement. Platforms such as management meetings, PHC re-engineering meetings, district review meetings and provincial level meetings of DCSTs help mobilise constituencies and create the potential for collaboration.

Advocating for change

DCST members provided space to discuss the prevailing human resource shortages in the district and applying continuous pressure on district management:

> *"Again, DCST members raised the issue of unavailability of staff as a 'risk'. The fact that the available personnel are overstretched; they are going to end up not coming to work" [DCST-PHC nurse - IDI].*

They also encouraged problem solving and agency within existing resource constraints:

> *"Health care professionals are asking to be trained and I said no, no one is going to train you because some of your colleagues can do some of those procedures. You can't wait to be trained for a simple thing like a skin test when your colleagues are there and can actually do it." [DCST- Family Physician - IDI]*

Promoting organisational change at the lower level

The DCST sought to promote organisational change in a number of ways (see Table 5) over the course of this study.

i. ***Mobilising resources***

The team was able to procure resources such as equipment and medicines to enable health care professionals to do their work and the system can work better.

> *"As we identify problems we try to address them to reduce maternal and child mortality. Like the issues of the sonar machines that we [DCST] procured for the different community health centres and baby formulas for dieticians." [DCST-PHC and Paediatric nurse - IDI].*

They were sometimes able to use their authority to bypass the bureaucracy within the system.

> *"Sometimes, we find out that medication is still out of stock or equipment has not been ordered! We'll go to the district office, and ask for it to be ordered because we need it to improve quality" [DCST – Paediarician - IDI].*

ii. ***Re-organising resources and changing practices***

Team members described efforts to improve care quality through recommending the re-organisation of service delivery processes.

"What we recommend now is daily antenatal services for patients to reduce overcrowding because on somedays there are no maternity for pregnant women. If patients are distributed daily, it will be easier" [DCST-Obstetrician - IDI].

Yet, re-organising services can constitute a substantive change in practice and may require persuading health care workers. For instance, this process of persuasion can involve (a) framing issues and/or (b) exerting influence and power:

a. Framing issues

The DCST sought to promote understanding of service delivery processes by showing how different people and treatments interact:

"We said to them [health care professionals] if a patient is here today, provide the service [but because the clinic is overcrowded] if you tell the patient to come back another day, there is a likelihood that the patient may not come back. That patient might be working or without money to come back to the facility" [DCST-PHC Nurse - IDI]

Promoting organisational change requires convincing health care professionals to embrace change and this can create dissonance, as routines may have to be discarded. For example, during the early phase of DCST implementation, there was resistance about the role of the team itself, but over the course of this study, there was a sense of growing acceptance, especially among other quality improvement actors.

b. Exerting influence and power

DCST indicated non-compliance to their recommendations in three of their quarterly reports as a challenge, and this was clarified during a follow-up interview:

There are facilities that are doing very well after our recommendations because they are implementing or when there are challenges, they will call (a DCST member). However, there are still those facilities… when you go for a follow-up visit ….where recommendations have not been implemented. Those issues are frustrating [DCST - Paediatric nurse - IDI]

In addressing this challenge, DCST drew on the support of other powerful actors and available disciplinary strategies, such as the issuance of a memo of instruction:

"…so when DCST come to me with a challenge [e.g. limited uptake of recommendations], I say …write it down, give it to my secretary and I will issue [the solution] as an instruction. ... You have to protect the DCST; their role is more on mentoring, coaching and audits. And it is important for us to remove them from the fray of disciplining people…" [District management member - IDI]

"We (DCST) drafted a memo indicating that all services must be provided daily which the district manager signed and was distributed. So I can say that is one of our achievements" [DCST - Paediatric nurse - IDI]

In addition to the above organisational change approaches and their influence on health worker practices is the expectation for improvement in health outcomes as anticipated in policy.

"There has been an improvement in some health indicators, however some have dropped. Moreover, DCST is adding value especially when considered collectively with programme-specific teams (e.g. HIV/AIDS, STIs and TB (HAST), Information management team etc.) in the district". [District management member - IDI]

While there is anticipation for improvement in MCH indicators, the combined, collaborative efforts of the DCST with other teams seems important for the observed improvements in MCH indicators.

Discussion

This paper explored the activities of a team-based innovation in clinical governance through the lens of institutional entrepreneurship. We found that the DCST and individual members have functioned as IE, altering, creating and nurturing norms and practices associated with quality improvement (Lawrence et al, 2009) and helping to align systems and structures for organisational change (Joshi and Carter, 2015) (see Figure 2). Further, in navigating through the complexities and path dependencies surrounding their change promoting activities (Garud et al, 2007), DCST's ability to find strategies amidst system challenges reveals and fosters their entrepreneurial capabilities.

We have previously documented experiences of resistance and role conflict in early implementation of the DCSTs (Oboirien et al, 2018), and, in this study, further note that the team must navigate a complex environment of multiple actors and strategies for quality improvement.

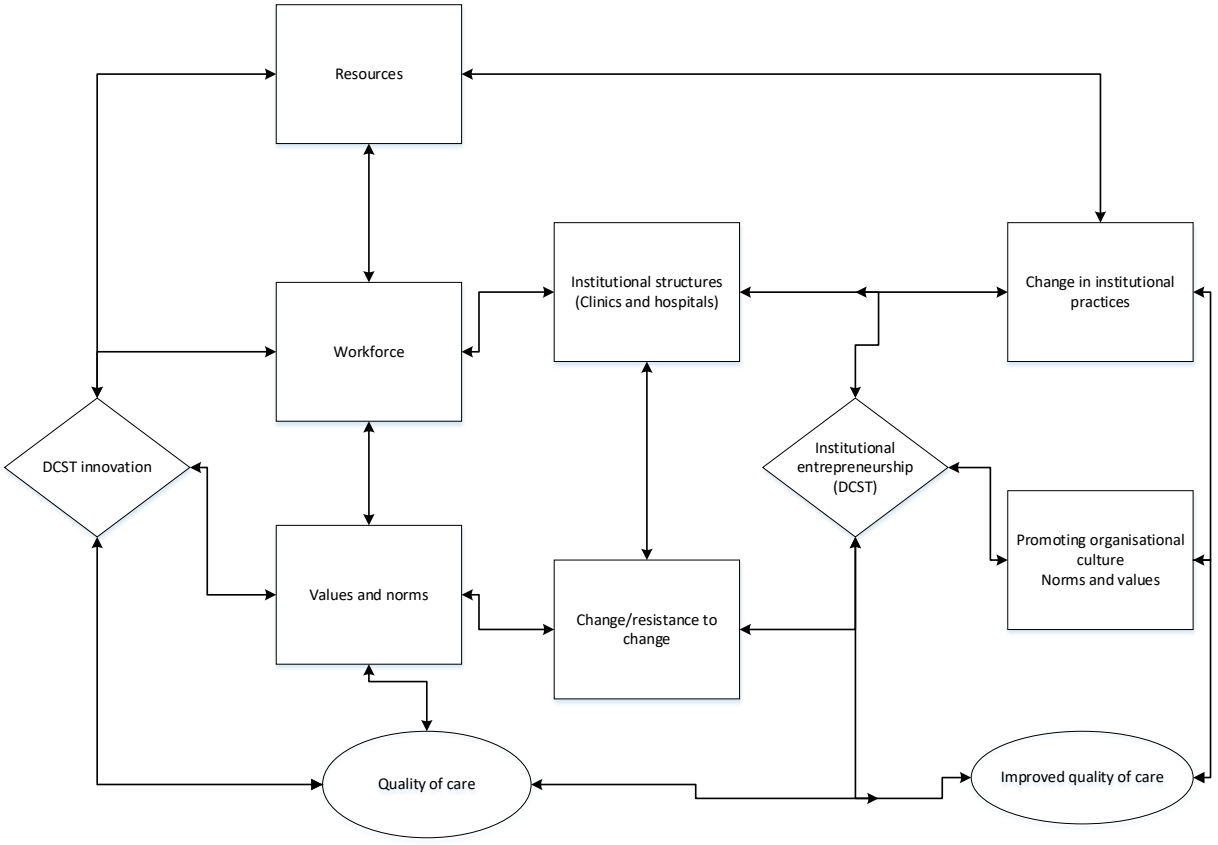

Figure 2: Pathway for quality improvement through the DCST innovation

The pathway represents the DCST activities and functioning, where appropriate evidence based methods or strategies present institutional entrepreneurship at a particular point in time.

Being able to navigate complexity may thus be important in itself for team members to facilitate expected changes to institutional practices, organisational culture, norms and values attached to their role, alongside their specialist skills, knowledge of the health system and the power and authority vested in their position as part of the district management team (Ministerial Task Team Report, 2011, National Department of Health, 2012a). Similarly, the national mandate and funding of DCSTs reveals the innovation as a political process.

Through activities including articulating strategic vision and direction, mobilising constituencies (Rao et al, 2000) and getting buy-in and convening and sharing information (Brinkerhoff, 2016), the team demonstrated institutional entrepreneurship. Additionally, by advocating for change (Maguire et al, 2004), mobilising and re-organising resources (Tracey et al, 2011) and framing issues (Maguire et al, 2004, Greenwood et al, 2002) individual members and the collective helped to promote organisational change (Joshi and Carter, 2015). These institutional entrepreneurship characteristics are interrelated and their manifestation points to potential enablers and constraints to institutional entrepreneurship that should be noted for improving the capability of the DCST innovation. Yet, at the same time, it is important to recognise that institutional entrepreneurship may not only be inhibited/facilitated by the activities of those who are IE but also by how much others in the system relate with and are affected by these activities. For example, findings suggest limited knowledge of DCST members, one way of increasing knowledge about DCST activities in our view, could be the use of nametags by DCST members, this can facilitate awareness and encourage conversation about their role. In addition, given the variation in knowledge of the team, there is need for DCST's planning, promoting and monitoring of their coverage of activities at district and sub-district levels. This would reduce the potential for inadvertent exclusion of certain facilities and health professionals from accessing DCST support. IE is relational, finding definition not only within the DCST and its members but also in how other actors perceive, respond and adapt to IEs within the system is important. In addition, resistance, conflict and/or collaboration may also contribute to the success or not of clinical governance itself and ultimately the health outcomes being governed.

Enablers and constraints to institutional entrepreneurship

In this study, three factors were seen to contribute to the institutional entrepreneurship characteristics manifested in DCST functioning. Firstly, existing systems and institutional structure drove the DCST implementation process itself. Secondly, entrepreneurship was a built-in characteristic of clinical governance activities (Dacin et al, 2002, Brinkerhoff, 2016), supported by provincial and national policy (Tracey et al, 2011). Thirdly, DCST members needed to encourage healthcare professionals to embrace agency in service delivery – a struggle for the DCST despite training and workshops (Table 5 and 6). Mentorship as prescribed in policy and through DCST practices (Connell, 2014) is one way of meeting this challenge. However, the DCST has limited capacity to provide mentorship in all health facilities given the performance-driven context in which the DCST were introduced. This context has driven additional expressions of institutional entrepreneurship within the team, including their use of the authority of a top district manager to force change. In some ways, therefore, it was difficult for the DCST to infuse recommended practices independently without drawing on influence and power of higher authority at the district management level. However, we cannot conclusively establish the merit of these forms of activities within the study period. The need for DCST to continue to monitor and evaluate their recommendations is important for this form of approach to be worthwhile. While this seems acceptable given the support by the district management member, there is a need to assess its short and long-term influence on health workers' practices.

Individual and collective institutional entrepreneurship

DCST functioning promotes a collective institutional entrepreneurship effort but not all members of the DCST take on institutional entrepreneurial functions in the same ways, a finding similar to institutional entrepreneurship analysis of HIV/AIDS treatment advocacy in Canada (Maguire et al, 2004). Institutional entrepreneurship may be manifested in some members because they seem better positioned (Maguire et al, 2004) and motivated to engage more proactively than others to bring about organisational change. In our study, nurse-specialists seemed more likely than doctors to act entrepreneurially given their potential to mobilise constituencies through the different management and service delivery related spaces e.g. the PHC re-engineering forum. Nurse specialists also seemed to be playing more convening and networking functions through presentations and workshops on district, national and global level priorities than doctor specialists are. Similarly, we can also associate discipline-specific (family medicine, paediatrics or obstetrics dyad) institutional entrepreneurship capabilities to the family medicine dyad in the DCST or the family medicine department in the district because of its more generalist framework, emphasising PHC and patient centredness, which encourages links to different services and programmes.

Yet, there is a discipline-specific identity attached to each member and their activities given their position and passion for their areas of specialisation such that the paediatric dyad is motivated to work with children; the obstetric dyad articulates maternal issues while the family medicine dyad articulates cross-cutting issues (mainly preventative services) in maternal and child health. While the team approach promotes a generalist scope, early implementation experiences suggest a MCH focus (Oboirien et al, 2015).

Effect of activities on desired outcomes

Emerging evidence on DCSTs and their influence on change anticipates improvements in MCH indicators although evidence is still limited. For example, Moodley et al. (2018) attribute national-level improvements in some MCH indicators to an improved HIV testing and ARV treatment strategy introduced since 2010 (Moodley et al, 2018) and not the DCST activities. Yet, there are also positive experiences of DCST activities and influence on change (Feucht et al, 2018, Oosthuizen et al, 2018, Feucht et al, 2016, Oboirien et al, 2015, Rhoda et al, 2014). Given available evidence, there is no clear causal pathway between DCST activities and the multiple complex factors influencing health outcomes. In our case study, it is important to state that we attempted to establish if there is a relationship between DCST staffing complement and MCH indicators, based on indicators in the DCST policy document. However, no relationship was established and analysis was inconclusive, so this was not reported given some of the multiple complex factors. For example, the collaboration of DCST with other teams in the district seems important for the observed improvements in some MCH indicators. But despite this collective effort, improvement is not satisfactory and this may suggest partly that DCST are not achieving. Alternatively, would things be much worse without the collaborative efforts? A health systems perspective that looks beyond individual actor performance is important for understanding and promoting clinical governance processes. We recommend that the multiple and complex factors that affect coverage of DCST need to be carefully assessed and suggest a clear monitoring framework with more proximal measures to ascertain success or not.

While, there are multiple reforms in South Africa that are aligned to quality improvement (National Department of Health, 2012b, Republic of South Africa, 2015), the DCST is one of the several innovations we are studying and contributes to the ongoing analyses on the influence of multiple reforms carried out by the universal coverage in Tanzania and South Africa project – evaluating and monitoring reforms. Nevertheless, would the situation be better or worse without the DCSTs? Their exercise of institutional

entrepreneurship is likely to ensure the highest profile of MCH issues at the district level. Yet, the need to expand their scope of functioning beyond a MCH 'spotlight' has been raised by actors at district/sub district management levels, as well as the DCSTs themselves, in light of the need to strengthen chronic conditions and services such as HIV/AIDs and mental health (Oboirien et al, 2018). However, given their specialist areas, this may be unlikely for other patients/users outside MCH services. However, how DCST adapt to this broader vision needs further exploration.

Study limitations

Firstly, we acknowledge there are limitations associated with the scope of the data used in this study. We have not included the perceptions and experiences of participants from certain programme – for example for HIV/AIDS, TB & STI (HAST) and some frontline nurses who were unavailable for follow-up interviews and recognise that they may have provided additional information. Further, there is likelihood that longer timeframes of follow-up (beyond 2015) could provide insights into other modes of functioning as actors engage more with DCST activities. In addition, this study did not involve participants who were not associated with the DCST innovation because at the time of the study we did not know who these actors were and what similar activities were happening. Secondly, during the data collection process, we found that some participants, especially frontline workers were unaware that they were engaging with the DCST, knowing them only by their names and not team membership. In subsequent interviews, interviewers used names of DCST members in order to ascertain knowledge of DCST from participants. Thirdly, we acknowledge the MCH focus of this paper as a limitation because it does not fully encompass the generalist scope of the DCST, which spans beyond MCH. It is important to continue monitoring DCST activities and functioning across programmes and through various actors' lenses for a whole system view. Further, the mandate of the DCST is to support MCH services including all complementary programmes. DCST's capability to support these programmes is based on their work plan and sometimes based on national goals which are also supported by non-governmental organisations and projects. As such, we acknowledge the difficulty of disentangling the role of DCST from other complementary programmes that already have external support, including funding, and which have contextual links with the MDGs for maternal and child health. In addition, our analysis cannot determine whether changes in MCH indicators are influenced by DCST complement because there are so many other factors that affect MCH indicators. Moreso, the causal pathway are currently unclear and this suggests an area for further exploration.

Nevertheless, a number of questions can be posed for future research based on our study findings. Firstly, how will DCST improve health care workers' skill shortages and practices? Given the difficulty in infusing recommended practices despite trainings by DCSTs, does this indicate that institutionalising practices based on training alone may not adequately address the perceived healthcare workers' skill shortages? Even though DCST policy identifies mentorship as an option to help embed new norms and practices, it requires more time and perhaps a less authoritative approach for the adoption of clinical protocols and guidelines. Secondly, what are the motivations of health workers who are on the receiving end of change? Thirdly, DCST members being female raises gender issues. What role does the gender of the DCST contribute to IE? Further, how does other social and political dynamics such as race, ethnicity or language play a role in gender of IE? Would IE be affected by someone seen as an 'outsider' to the district or province? Fourthly, how best can DCST monitor the coverage of their activities so that some facilities or health professionals are not disadvantaged in accessing DCST support given the variations in knowledge of the team? Lastly, post-2015, how does the MCH focus evolve to accommodate other health conditions and emerging directions in the post-MDG era and under South Africa's broader universal health coverage mandate?

Conclusion

In this case study, using an institutional entrepreneurship lens, we identified change-promoting activities and found evidence of institutional entrepreneurship in the ways that a district-based clinical specialist team provided clinical governance in one of South Africa's health districts. This approach contributes to our understanding of health system strengthening through: (i) analysing activities that promote change within a micro-level system or context; and (ii) exploring evidence of institutional entrepreneurship in the DCST clinical governance activities. The DCST innovation provides an opportunity to promote institutional entrepreneurship to alter organisational arrangements, improve the delivery of health care services and enhance system change. Yet there are nuances between individual members and the team. This paper has begun to explore these activities, but similar questions must be asked as the DCST programme matures.

Acknowledgements

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CHAPTER 8: DISCUSSION

Answering the broad research question: ‘what lessons can be learnt about the institutional role and functioning of DCSTs within the context of a decentralising district health system in South Africa’ requires an understanding of relationships and processes that describe DCSTs’ clinical governance activities. In addition, there are specific policy expectations that were unclear from the onset, which serves as areas for drawing lessons. These include questions around how the introduction of DCSTs as new actors would unfold in different district contexts and how these teams might impact on the (a) DHS status quo and organisational structure, (b) relationships between actors; and (c) organisational practices for system change. It was also unclear (d) how DCSTs might navigate existing challenges within the system (especially poor maternal and child health outcomes); and (e) how a team approach would work as a policy model for influencing health system objectives.

The early implementation experiences of DCSTs in three districts partly reveal these expectations in their broad and specific forms (chapter 5-7) as well as their interconnecting effects. Together these expectations emphasise the context and environment in which DCSTs were introduced, that is, the readiness of the DHS to host the DCST innovation. Further, it highlights the need to attend to actors, relationships and processes in policy reforms towards UHC when addressing issues of quality of health care, as well as the importance of understanding the difference between the practiced pathway of change and the theory of change.

8.1.1. Readiness of DHS to host DCST innovation

In some ways, readiness of the DHS to host the DCST innovation is informed by a recruitment process which involved gathering submissions at the provincial level to help consolidate suggestions on DCST innovation across provinces. There was also input from the district level and engagements with professional bodies and academic institutions on provincial submissions in the design of DCST innovation. The design relates to the team composition models, reporting lines, location, functioning and performance management areas. In addition, there was a planned process of formal launching, induction and orientation of DCSTs at a national level [40]. These standardised processes partly influenced the ability of the DHS to absorb the DCST innovation. Further, findings indicate the role of institutional structure such as the role of the family medicine department in one study site as a factor in strengthening DHS readiness to host the DCST.

However, in all study sites, access to and management of resources – existing ones, those leveraged through the NHI conditional grants or those garnered externally have varying influence on recruitment and integration processes (chapter 5). While existing resources and NHI conditional grants was reportedly sufficient in two of the study sites to integrate (an incomplete) team into the DHS, in one study site (with higher team complement), there was need to seek funds externally (see chapter 5). Availability of resources influenced getting the DCST fully constituted as many are still not fully complete. For example, variation in the composition of DCSTs in the three study sites highlight recruitment challenges which manifested in limited recruited doctor-specialists given South Africa's human resource constrained environment [41]. In addition difficulties by districts to manage the financial commitments associated with DCSTs' implementation such as the perceived high salaries of DCST members (see chapter 5) may further suggest the financial management problems many DHS face both in day-to-day management of the DHS [52] and in

combination of managing innovations. How DHS manage resources effectively are important for monitoring DCST innovation as well as other health reforms within the broader NHI mandate.

Again, readiness of DHS to host the DCST innovation in the three study sites suggests a disruption to districts' institutional setting. DCSTs came partly as a "threat" at the sub-district level [136]. The reason for this is partly because actors that were engaged with were limited to the district management level. This is also partly explained by the top-down imposition of policy leading to role conflict, resistance and low-buy-in [56, 78] particularly at the sub-district and facility level. However, it will be misleading to see resistance simply as a blockage that should be excluded or ignored in the process of change, instead as a fundamental part of a change process that needs to be managed [56]. It may have been possible to avoid the conflict regarding the role of DCSTs if the provincial and national department of health gave districts substantial opportunity to engage with actors at the sub-district, district hospital and facility levels before the DCSTs were recruited. Yet, while this may imply "taking for granted" existing institutions [137]. It does not mean that the design of innovations is ever perfect [56]. This is because an innovation (often complex) should be allowed to test its ability to navigate through a complex adaptive system [106]. Nevertheless, with the planning and design of the DCST innovation which went through a consultative process and the development of a standardised work plan, one should have expected that there was a pilot of the innovation in some districts to allow a feedback process. This can help inform policy makers and implementers of the relational issues that may arise at the point of change. By contrast, giving the innovation the opportunity to adapt to its environment in different settings through a national-level roll-out process, may have enabled different profiling of creativity and entrepreneurship by those responsible for DCSTs' integration into the DHS as well as DCSTs themselves through their activities and functioning (chapter 7).

8.1.2. How does context differ?

The study site with a relatively larger urban setting had greater opportunity to attract specialists compared to those that were largely rural and/or resource constrained. However, beyond the sites studied in this PhD, there are points of reflection in districts without DCSTs. While the mandate to institute DCSTs nationally was partially fulfilled with a national rollout of DCSTs at 94%. Yet, there are no DCSTs in three of the 52 districts in the country. These three districts are located in one province and this raises questions about the extent of provincial-level buy-in to the innovation in the first place. On one hand, this suggests that there is autonomy at the provincial level in implementing national-level reforms and the extent of politics in the implementation of health reforms [138]. This may be partly because, the province is the only province in South Africa under the administration of an opposition political party compared to the other eight provinces under the administration of the ruling majority political party [55]. It is also worthy to note that in this province where only one DCST exists, provincial health performance indicators are better compared to the other eight provinces in South Africa [55]. In particular when compared to provinces where all districts have DCSTs. Gilson et.al (2017) reports on a good track record of this province in sustaining management strengthening initiatives and ensuring "leadership stability and depth"[55]. As this dynamic poses additional questions for further research, it will be important to interrogate these dynamics further notwithstanding the absence of DCSTs in three health districts in the province. Yet, these better health outcomes at a provincial level have been noted even before the introduction of DCSTs. Further comparative studies of DCSTs at a provincial and district level (especially in better performing settings) will help provide further insights into quality improvement culture across settings in South Africa.

8.1.3. Addressing quality: attending to actors, relationships and processes

DCSTs as actors are central in strengthening health systems as well as driving emerging health sector reforms [139]. Their role has been crucial in aligning and integrating roles, responsibilities and programmes for quality improvement. This is because multiple actors are placed at different levels and across different programmes within the health system's organisational structure, struggling with the bureaucratic setting that have the potential to create harm or hinder access to health care. DCSTs have led change, but there are other actors such as implementers and beneficiaries of change (managers at sub-district and facility levels and frontline staff) [17] who are equally important in their clinical governance process. Implementers ensure that quality standards drive the delivery of 'everyday' care but they are also beneficiaries of clinical governance activities given the support they receive from DCSTs.

Yet, there is a feedback loop [106] between actors and quality improvement processes which is driven by roles and relationships. In situations such as those revealed in this study, roles in quality improvement were easily misplaced given the fluid nature of boundaries of control. A decentralising decision making and improved agency in the delivery of health care can introduce fluidness in boundaries of control. Nevertheless, such fluid boundaries of control are important if actors are to assume increasing elements of institutional entrepreneurship. Further, the complicated relationships that drive the state of change, such as resistance from implementers and push for organisational change by DCSTs are part of an organisational learning process for those involved in managing innovations [56]. This involves a 'double loop learning' through questioning of organisational values, behaviour and service delivery practices at their basic level [56] for quality improvement. In addition, the double loop learning while helping to promote advocacy for improved accountability culture [48], it also initiates increasing elements of institutional entrepreneurship among leaders of clinical governance and change.

8.1.4. Understanding the practiced pathway of change and the theory of change

Reflecting on the ToC for the DCSTs (Figure 3-1) based on the assumptions of what will happen in advance and what actually happened in practice built an evidence base for the DCSTs. There are points of divergence from what was anticipated in the implementation of DCSTs and what manifested in practice. This can be rephrased as the difference between the ToC and the practiced pathway of change [120]. ToC served as a foundational lens for understanding implementation while (retrospectively), it allowed the comparison between the pre-conceived assumptions of change based on policy as well as in practice. This then led to a mapping of actors, issues and a dialogue-based analysis of values and philosophies of change based on actors' reflections [120].

From the onset, we set out a theoretical idea of what will happen in practice based on DCSTs' reports such as details of team complement and competencies, role and setting for functioning. Further, the policy intent was also linked to improvements in maternal and child health indicators. The ToC of how and why DCSTs were expected to influence these outcomes were based on their specialist professional status and competencies, long time experience in their respective professional discipline and experience in PHC and the DHS.

However in practice there are divergent practices from the ToC or assumptions that were not clear from the onset which were revealed in practice. Figure 8-1 shows divergent practices from the ToC (Figure 3-1) as the practiced pathway of change revealed from the reflections of study participants. Firstly, the role of other actors and other complementary programmes was partly crucial in influencing maternal and child health outcomes positively. While the role of PHC coordinators was not assumed as part of the ToC (Figure 3-1), it became clearer from the reflections of actors including DCSTs (chapter 5). Another key assumption, is a close relationship that was envisaged between the office of health standards and compliance (OHSC) and DCSTs.

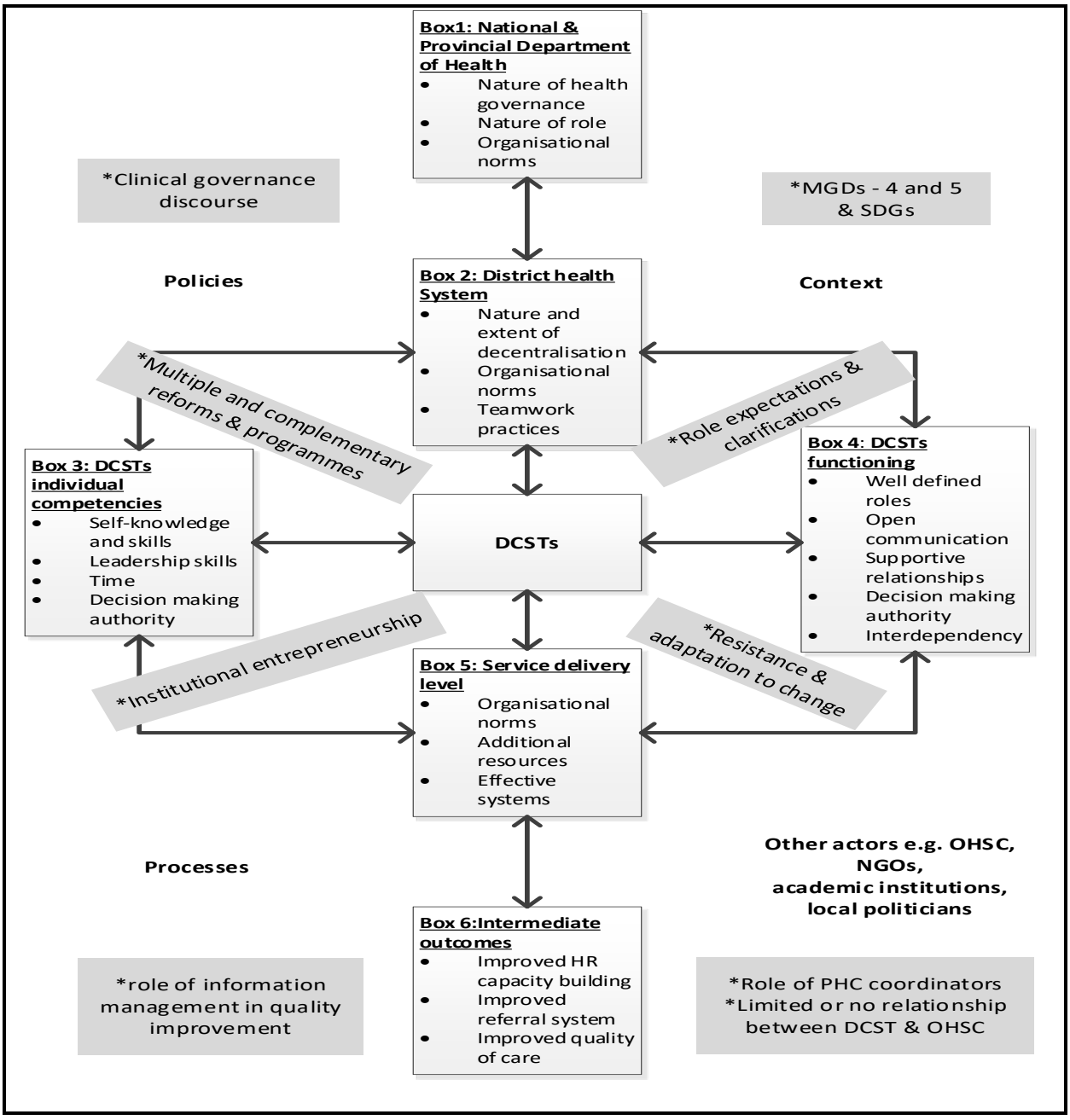

Figure 8-1: Practiced pathway of change for DCST innovation

Note: * indicate divergent issues or practices from the initial TOC.

The mandate of the OHSC are to protect and promote the safety of users of health care services by monitoring and enforcing compliance by health establishments (both private and public) with regards to norms and standards and managing complaints by users of health care [140]. Further

the OHSC is responsible for interdependent regulatory outcomes to reduce avoidable morbidity, mortality and harm as well as improvements in availability and acceptability of health care services for users [141]. OHSC became functional in 2014 [141], in the public health sector, DCSTs can prepare health care professionals for this regulatory process. Yet, there was limited insights from participants about the [perceived] relationship between DCSTs and the OHSC or perhaps this was not a focal point of reflection for many of the actors despite the role of the OHSC in quality improvement.

Another issue of divergence from the Toc relates to the policy goals and the contextual environment. Broader goals such as MDGs 4 and 5 (i.e. maternal and child health) drove the expectations of actors including the DCSTs and informed the link between DCSTs activities and other programmes complementing the MDGs for maternal and child health (e.g. CARMMA strategy). Further, in the process of the research and thereby when documenting the practiced pathway of change, it was possible to locate DCSTs within a global clinical governance policy context (Figure 8-1). While the literature on clinical governance shed light on its robustness and complexity as a quality improvement strategy and health systems strengthening activity, there is no one size fits all approach for its implementation [18]. This further broadened the pathways through which change may have occurred and also helped to associate clinical governance activities to the institutional entrepreneurship literature (chapter 7).

Lastly of key importance to the practiced pathway of change are the themes such as multiple and complementary reforms and programmes, role expectations and clarifications and resistance and adaptation to change (see Figure 8-1). And from an interpretivist approach to this evaluation is the grounding of DCSTs activities within institutional entrepreneurship theoretical lens. It is important to re-emphasise the importance of the ToC approach as one form of an action research model that

helped to reveal the assumptions surrounding DCST activities based on actors' themselves. In addition, it was during the course of applying the method and doing the research that these discussions happened and the insights arose – proving to be of value to actors as participants to the study. Further, in summarising the assumptions and activities of the DCSTs, the practiced pathway of change also highlighted the influence of the top management level of the DHS in the DCST innovation. DCSTs' role and activities helped district management in creating evidence and gathering indicators that actors are collectively accountable for. Further, evidence being gathered by DCSTs serves as tools for strengthening data and information management systems at the lower level (chapter 6 and 7). This indicates that information and data management is an important pathway for identifying areas for improvement in organisational practices and service delivery.

Furthermore, other practiced pathways of change are similarly important such as the role of existing systems that complement quality improvement activities, the role of implementers and beneficiaries of clinical governance activities, concurrent reforms such as the CARMMA strategy, ideal clinic initiative and the other streams of PHC reengineering (WBOTs and GP contracting). Together all contributed to the context, activities and processes that impact on maternal and child health indicators.

Although, the influence of clinical governance on change, given its evolving principles and corresponding elements in my view will require that actors adopt entrepreneurship in order to align actors, programmes and processes (additional details in chapter 7). Yet, some of these issues (such as influence of other streams of PHC reengineering) may not have been explored in-depth in this research while building an evidence base for DCSTs, given the broad nature of these issues on their own and the limited data for analyses. However, they provide signals for further probing and future monitoring of DCSTs. Given the limited timeframe (within the scope of this PhD) to collect

ongoing evidence of the DCSTs activities, it is important that future efforts seeking to interrogate the extent of change should continue to ask questions about the nature of change, for whom, how many, how good (i.e. the threshold above which an outcome can be said to have been achieved) and when [120]?

8.1.5. Summing up DCSTs implementation milestone and effects on change

It is important to highlight the DCST innovation narrative since introduction, including some of the assumptions that were documented before and during their implementation. Nathan and Rautenbach (2013), identified potential risks associated with the implementation of DCST strategy especially in managing the costs and the existing human resource base in districts. They highlight potential risk regarding (a) limited scope of practice for specialists in other disciplines (except family physicians given their generalist scope) (b) losing existing specialist posts and (c) DCST prioritising management tasks for clinical tasks [59].

In terms of scope of practice among DCST members, based on this PhD findings, there was clarity about the role of the obstetrics and paediatric dyads while the role of the family medicine dyad was perceived as unclear by participants especially the family physician (chapter 6). Yet in practice, obstetrics and paediatric dyads are more inclined and motivated to work within their respective disciplines while the perceived non-clarity about the role of the family physician in one study site (chapter 5 and 6) may have influenced scope of practice given the expectation of a generalist role. This is contrary to what was identified as a risk by the authors and implies the differences in context. Yet it also indicates that the family medicine discipline in South Africa is going through a phase of role clarification and adaptation given emerging evidence contributing to the field of family medicine [142, 143].

Vaughan-Williams (2015) reviewed and presented a personal account on the role of family medicine within the DCST innovation, revisiting the need to support teams at an organisational level in districts. In addition, the need for family physicians to pay attention to variation in their environment as necessary for providing the required organisational level support. Von Pressentin et al. (2018) in a qualitative case study also confirmed a number of benefits of family physicians including the ability to enhance coordinated functionality of local health system, increasing clinical services and facilitating clinical governance. Both articles, advocate for the employment of family physicians at scale to enhance the DCST innovation and improve the functioning of the DHS. In chapter 6 and 7 of this thesis the institutional role of the family medicine department was also crucial in the implementation of DCST in one study site. Further, in terms of scale-up and sustainability for different cadres of health workers including DCSTs, review by Mofolo and colleagues (2019), reassesses human resource planning in meeting the NHI mandate. They identify the need for effective alignment of human resource including the DCSTs that are still in shortfall and inequitably distributed. These issues pose additional challenge for quality improvement [144] and requires ongoing monitoring and evaluation of different models of human resource mix in different contexts that complement DCSTs activities.

Nonetheless, the risk identified by Nathan and Rautenbach (2013) of losing existing specialists was partly established by this study. In some ways, some DCST members were previously working in the district in a different position before recruitment and this may have constituted a loss to the positions they held previously if the positions are not filled especially given the context of moratoria on human resource recruitment in some settings. In addition, some DCST members resigned from their post after recruitment and it was not clear where those DCST members ended up in the system.

Beyond revisiting some of the earlier assumptions associated with the DCST implementation that have been documented in the literature, Voce et al. (2014) began the documentation of DCST rollout process, outlining the policy and strategic background of the DCST (describing team composition including roles and responsibilities), providing update on recruitment and appointments, induction, orientation and early and implementation experience. Authors highlight the need to document how DCST roles have been tested and Oboirien et al. (2015) further documented some of these early implementation experiences in three districts (see chapter 5). Authors presented understanding of roles from different perspectives and highlighted challenges that suggest some resistance to change. Further exploration of roles was presented by Oboirien et al. (2018), highlighting role conflict and coping strategies for role adaptation (chapter 6).

In terms of DCST activities, existing literature have reported on the DCST innovation in relation to sole activities or programmes such as in Kangoroo mother care programme [145], perinatal death reviews [146], labour ward management [147, 148] and emergency medical services [149]. In many ways, there have been positive accounts of these programmes on service delivery and health outcomes in different contexts given the above studies.

DCST innovation is performance driven and despite the complementary quality improvement activities as well as programmes carried out by multiple actors, DCSTs to a large extent are accountable for the performance of maternal and child health indicators at a district level. In chapter 7, I document existing evidence of sole DCSTs' activities as well as combination of change promoting activities that contributed to achieving MDGs for maternal and child health and future NHI mandate. Findings on change in maternal and child health indicators indicate (mostly) a positive change in the three study sites (see Appendix 14) although, there are inconclusive patterns that require further exploration. It is important to note that the inconclusive patterns in the analyses

of the indicators is a limitation in method and has been stated in (chapter 7) as much as the different indicators that are available and how they might have been analysed. This inconclusive evidence on the influence of DCSTs on improved maternal and child health indicators are also buttressed by other emerging empirical studies: for example, Moodley et al. (2018) suggests that the improvements in maternal and child health mortality is solely as a result of the expansion of the antiretroviral therapy programme and not as a result of the DCST innovation [60]. By contrast, Oosthuizen and colleagues (2018) report the positive impact of DCSTs as facilitators in an obstetrics care intervention study in one district between 2015 and 2017. It further suggest the role (and need) of promoting a strong clinical governance, accountability and ensuring skilled and motivated maternal clinical professionals for scaling and sustainability of the intervention [148].

This divergent evidence of DCSTs' impact on maternal and child health indicators should form part of future research efforts to continuously conceive DCSTs as part of a systems strengthening strategy rather than a direct effect on health outcomes. Thus future empirical studies should continue to draw on a whole systems thinking perspectives.

8.1.6. Limitation of study

Some limitations have been identified in the results section of the thesis in chapters 5-7. In summary, they relate to scope of the data used (in terms of participants and length of time), the choice of indicators for the description of maternal and child health outcomes and the limited scope of secondary quantitative data analysis. In addition, issue of disentangling DCSTs' activities from other complementary programmes and projects when taking an organisational or systems perspective to analyses as compared to sole programmes has been noted. Beyond those presented in those papers, other broader issues are outlined.

Although, this study helped to accommodate the differences in team composition across three study sites which provided contextual lens for the case study. However, the absence of DCSTs in three districts in South Africa (and which serves as a finding in its own right) poses opportunity for comparing different DHS. Although this was not clear at the beginning of the study that such dynamics in implementation would exist even after the completion of the study. It would have contributed to our evidence of other contextual dynamics. Nonetheless, comparing districts with and without DCSTs can serve as basis for future impact assessments, but this needs to be considered within the context of other quality improvement models such as clinical outreach programmes available, the number of specialists located within different districts who are not DCSTs and the extent of external resources from non-governmental organisations and projects contributing to clinical governance. Furthermore, the development and actual implementation of the UNITAS project was running almost simultaneously with the roll-out process and implementation of the DCSTs. At that time, the absence of DCSTs in these districts were seen as a delayed process rather than non-uptake of the innovation. However, future monitoring and evaluation of DCSTs can take forward this research gap.

Teamwork is an important element in a clinical governance process. As a policy model, it strengthened the capacity of DCST members to deal with the overlapping dimensions of managing maternal and child health services. This is also coupled with their ability to manage the complexity associated with the integration of the complicated data management processes and programmes associated with maternal and child health services within bureaucratic settings. While the data used in this PhD is not sufficient to explore teamwork experiences in-depth in the DCST innovation, the role expectations, conflicts and adaptation explored at a district level, gave insight into 'role' as one dimension of teamwork. Further explorations of teamwork at the level of the DCST can

provide an in-depth process for assessing teamwork experiences broadly given their ability to showcase a mediating effect between higher level processes and influence on lower level organisational practices.

8.1.7. Strengths of study and Contribution to knowledge

Action research approaches and theory of change for one, provided the space to explore, monitor and document the process of DCSTs early implementation experiences. This was right from the onset, when the PHC reengineering reform was introduced as part of the NHI system in South Africa. The UNITAS project started its evaluation of policy reforms towards UHC at the time when consultations with stakeholders was ongoing, so researchers in the project and the PhD candidate played an 'outsider' role [129], while providing the space for us to engage and probe issues as they arose.

There is value in the methods used in this study as it helps in explaining a complex system. Theory of change (a process-based evaluation approach) was useful not only in describing the actors and activities that shaped the DCST innovation, but it provided knowledge of how and why actors react to the innovation in a particular way or how activities suggest a wider meaning for quality improvement activities. This is because it allowed in-depth probing of the issues associated with the DCST innovation, such as role of existing actors, existing and complementary quality improvement programmes and activities. In addition, the use of a case study design also helped to identify contextual factors associated with the DCST innovation while complementing the in-depth qualitative engagement with actors through the theory of change approach. Further, the longitudinal nature of data collection, which was carried out over two rounds, allowed a feedback and reflective process among participants as well as researchers. More so, the reflective thinking and probing of issues by researchers helped to fit the emerging themes within a broader space of

theory (reason-giving). This has provided a lens through which questions around 'why' was explored. This enriched understanding of role dynamics as well as the role actors' play in shaping and disrupting old ways of doing things.

This study therefore generated knowledge about the dynamics of institutional role and functioning of DCSTs in the context of a decentralising health system (Appendix 15, 16 and 17). It also supported district-based activities through regular engagements and documentation of the DCST implementation experience. This involved the process of monitoring and evaluating DCSTs which contributed to an early-warning system of challenges and practices of implementation experiences within districts. This was possible through feedback meetings in form of workshops to district management members (Appendix 16), sharing of write-up (e.g. paper 1 – chapter 5) with DCST mentors in districts for review and input before publication. This led to lesson learning as comparative study across three study sites allowed participants to engage with issues in other contexts, some shared across study sites and some positive experiences that actors learnt from other study sites. During the course of the study it served as possible means of supporting institutional level processes for promoting change.

It is also worth noting my appreciation of my contribution to knowledge. This PhD is a home-grown South African innovation which I was able to assess in relation to other health systems. Based on its focus, evidence generated from the study (chapters 5-7) provide some of the first evidence from LMICs on this type of health systems' strengthening intervention. In addition the papers used organisational and management science literatures to explore health system issues. The papers presented in chapter 6 and 7 are among the first in LMICs that have used role theory and institutional entrepreneurship literature to analyse health systems interventions. This offers

important insights into future research framings and evaluation of policy implementation as well as their monitoring.

CHAPTER 9: CONCLUSION AND RECOMMENDATIONS

South Africa continues to strive towards instituting a quality improvement policy and system partly through clinical governance. A number of programmes, actors and processes complement the South African quality improvement approach. However, there was not enough thought about how this multiplicity of programmes, actors and processes will be integrated during the early stage of implementation. There is also a sense of declining accountability mechanisms that can monitor and support these processes. These findings confirm existing evidence of how integration of programmes are left at the cold face i.e. facility and DHS level for health care professionals and system actors to resolve [150]. This poses challenges for actors and should be factored into the monitoring systems of innovations.

The introduction of DCSTs to lead the South African clinical governance implementation at a district level through the PHC approach is central to achieving UHC, although learnings are just starting to emerge. Further, while there were challenges in putting resources in place in order to get DCSTs going in their roles, managing role expectations and conflict is similarly challenging. If there is any potential for scaling up the DCSTs (i.e. increasing the number of teams per district), it would be important that this is initiated or conceived at a district level. In addition, the views and suggestions of sub-district and programme level managers, including existing DCSTs should be put into consideration when deciding about potential scale up. This will be worthwhile in as much as there is a costing evaluation to ascertain value for money in this regard. Nonetheless, these processes are still important for monitoring existing DCSTs across settings.

Given the understandings, perceptions and experiences of DCSTs in South Africa, with its uniqueness and complexities, providing the enabling environment where institutional entrepreneurship can strive is important for sustaining the DCST innovation. In addition, there is need for a systematic review of clinical governance implementation and experiences in LMICs to further strengthen DCST evidence base within broader contexts to enrich existing evidence. Whilst this complements ongoing discussions and evidence building for the Lancet Global Health Commission on High Quality Health Systems in the SDG era [2, 3]. Further such evidence synthesis can serve as a decision making tool for DCST sustainability and potential scale-up. In addition to recommendations highlighted in chapters 5, 6 and 7, the PhD draws attention to the following issues for managing change going forward:

- As clinical governance does not rely on "one magic bullet", there is a need for regular engagement by researchers, health system practitioners and policy makers given the dynamic state of clinical governance processes.
- The changing policy environment and combination of different feasible quality improvement alternatives should be taken into account when engaging with and monitoring actors to ensure clarity of roles and functioning.
- Given the variations in health outcomes that partly define the performance of DCSTs, there are examples of good practices in different district settings in South Africa with or without DCSTs that have not been explored and which can serve as basis for further learning.
- Future follow-up evaluations of DCSTs should continue to employ a process-based evaluation in order to sufficiently capture the pathways of change rather than only focusing on final outcomes because clinical governance is process driven.

- The variations in DCSTs complements, availability of resources and skill base should be monitored given the potential that these factors can contribute to inequities both within and across districts. Evidence of variations in knowledge of DCST members among health care professionals (chapter 7) already imply variations in scope of support received among DCST beneficiaries. It is important that interventions by DCSTs (which are often need-based) do not lead to inequities as locally-driven interventions may influence outcomes differently across settings suggesting an unintended consequence of the NHI as a whole.

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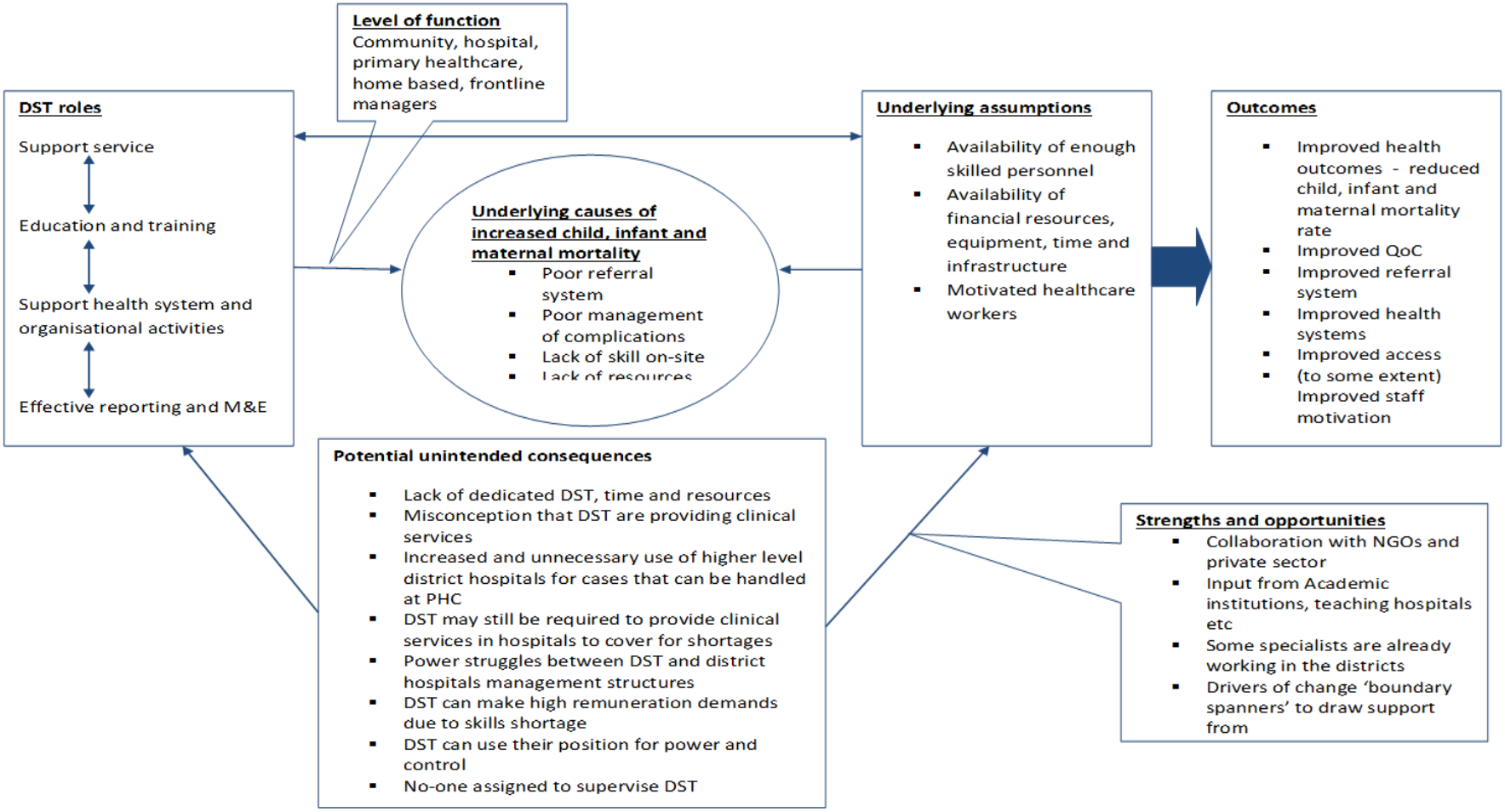
LIST OF APPENDICES

APPENDIX 1: ToC for DCST [Source: UNITAS' project Archive]

Theory of change for DST



APPENDIX 2: UNITAS Project's sampling strategy and data collection approaches

UNITAS sampling strategy for the survey tools

The UNITAS project applied a two-stage cluster sampling strategy with health facilities (primary sampling units) selected in the first stage and elements (patients, health workers, records) within health facilities selected at random from each of the health facilities (secondary sampling units).

Stage one: Selection of the sample of health facilities

Within all three sub-districts selected for the UNITAS project, but with particular focus on Tlokwe sub-district for this PhD, we will purposefully selected 1 district hospital (or the next level referral hospital where there is no district hospital) and 5 community health centers (CHCs) and/or clinics that refer patients to the selected referral hospital and where all or some of the innovations are active. In each of these 6 facilities per sub-district we will do in depth qualitative work as well as administration of the survey tools. In addition, from the total number of facilities (CHCs and clinics) within Tlokwe sub-district for this PhD, all 9 facilities will be selected for the administration of survey tools.

The maximum number of health facilities that will be included in the UNITAS study is 36 (12 health facilities per sub-district) and exceeds the recommended minimum number of clusters (n=30) needed for the sampling strategy. However, because Tlokwe sub-district only has 9 facilities, all 9 facilities will be included in the sample and is inclusive of the overall minimum number of clusters for the UNITAS project that is recommended.

Stage two: Selection of the sample of health workers

a) *Health workers*: At each chosen facility, we will establish a list of all personnel working at the facility according to professional groups (i.e. GPs and nurses/midwifes). A simple random sample of at least 10% will be selected from each group in facilities with a large number of staff. In smaller facilities of up to 5 persons, all health workers will be included in the sample[17].

Site level work

[17] 151. Orgill M, et al., *Universal Coverage in Tanzania and South Africa: Monitoring and Evaluating Progress – Research Protocol*. 2013.

a) Context mapping

In each site an initial phase of work will draw together data from existing reports as well as from interviews with key informants(e.g. key district health managers, other public sector officials of importance in the district, community representatives, health programme and facility staff)and researcher observation and reflection, to develop an initial understanding of the site context. The Contextual Mapping Guide will be used to direct us to key issues within each site. The respondents will be chosen in collaboration with district managers, but also to ensure a broad perspective on district context. Overall the mapping will allow us to (1) get to know what is happening in the districts, (2) build relationships and trust with relevant groups of implementing actors and (3) provide the basis for monitoring over time any fundamental changes in context within the site (such as large increases in donor funding over time or significant changes in local leadership that may influence implementation). Context monitoring will involve, on roughly a quarterly basis:

- Reviewing further/new documents and selected indicators; and
- Engaging in day-to-day conversations with key stakeholders

b) *Developing a Theory of Change for each innovation*

Having introduced the research to the district and begun developing rapport with key stakeholders we will begin an intensive phase of action research at the district level.

Throughout the period of our work in each district we will meet regularly with key district managers to update them on work done, reflect on new ideas and findings, and decide the next steps of work. We will also work collaboratively with colleagues in these sites, undertaking work together with local colleagues when possible and appropriate. As outlined below, the work of developing the theories of change involves a range of interviews and discussions. Although difficult to specify in advance, the monitoring work is likely to involve various forms of data collection. Throughout this process of engagement, the researchers will also keep diaries to record their own observations, experiences and ideas.

The work will essentially entail co-constructing, monitoring, evaluating and re-constructing a ToC about each innovation, working with key implementers through a ten-step process outlined below

and summarised in Diagram 1. This process has been developed from review of the theory of change literature (Mason & Barnes, 2007; Vogel, 2012; Eguren, 2011; Stein & Valters, 2012).

Steps 1-3 represent preparatory work, some undertaken before beginning to work in the site. Steps 4-10 represent the work of direct engagement with implementing actors in each site. Whilst it is likely that there will be some adaptations to this process in practice, it provides a broad framework for our work.

Steps 1 & 2: Consider the boundaries of the innovation and identify those groups of implementing actors whose behaviours and actions represent central elements of the innovation.
This will be done in the preparatory phases of the work. Although the set of actors will vary from case to case, they are likely to include:

1. managers supporting implementation (e.g. national managers directing implementation, and/or district health managers);
2. the groups of other health managers and workers directly involved in implementing the innovation (including, for some innovations, managers and workers based at different levels of the health system);
3. any community members who are directly involved in implementing the innovation (e.g. community health workers, clinic health committee members);
4. community members who are beneficiaries of the innovation.

Step 3: Draw up a generic roadmap of how we envisage the policy will play out in practice and achieve its objectives (a 'high level' theory of change).
Developing the high level TOC requires engagement with existing information on the relevant reforms, including the insights of national level implementers. The high level TOC also provides an initial starting point, based on one perspective, to be revised and developed with the the views and ideas of the implementing actors who actually drive the implementation process. Comparison of the different perspectives may highlight important issues for national level policy-makers to consider in further planning. Finally, the high level TOC may provide some initial ideas of issues to monitor over time in implementation tracking.

Step 4: Identify groups/individuals to work with in developing a theory of change at the local level. The first step is to build close relationships with key managers of the innovation in the implementation sites. Recognising the boundaries of the innovation, we will then, in collaboration with the managers, identify and engage the other groups of actors whose views and perspectives are needed to develop the theory of change, and to track implementation experience. We will also need to consider the feasibility of engaging one group comprised of different actors to develop each innovation TOC compared with gathering views from different actors at different times.

Step 5. Develop a process of engagement and question guides to enable discussions with participants.

The questions will be derived partly from the high level TOC (Step 3), as well as documentation and innovation theory. They will focus on understanding how and why the different groups think innovation implementation will play out over time, paying particular attention to the expected behaviours and activities of implementing actors innovation. It is particularly important to understand the assumptions that underpin respondents' views and ideas, assumptions, for example, about why actors will behave as expected, or about how the innovation will fit with existing practices and activities, as well as the timing of different activities in implementation, or the linkages among those activities.

The core questions to ask in developing any TOC include:

a. What is your overall vision/goal?
b. What are the key activities you will implement to achieve that vision/goal and who will be involved in implementing them and in taking action to achieve that vision/goal?

c. What assumptions underpin the selection of these activities in relation to this vision/goal?
d. What assumptions underpin the actors you will involve, or expect to play a role, and the expectations you have of their role in taking action towards the vision/goal?

Step 6: Conduct interviews and host group discussions at suitable venues.

We will pay particular attention to any differences in the TOC between actors. Different implementers are likely to have their own interpretations of policies and we will try to explore these interpretations and perspectives, as well as the sources of these perspectives.

Step 7: Synthesise different actors and groups ideas, in developing the TOC.

The research team will then develop a single synthesised TOC from the different related discussions.

During this process, we will also identify possible processes or events that could affect policy implementation – both anticipated and unanticipated, which may be important to monitor over time. Within the TOC we will also reflect any significant differences of views between respondent groups on aspects of the TOC and, again, these differences may highlight issues that will be important to monitor over time. Finally, respondents may themselves make suggestions about issues to monitor.

Step 8: Discussion of synthesised TOC with district managers and critical implementing actors.

We will then go back to the district managers, and, as is feasible, other critical implementing groups to present our synthesised TOC , and to we will also discuss a subsequent monitoring process. This process will allow us both to validate and revised appropriately the TOC, and, through engagement, ensure that our work is supportive of and supported by key managerial colleagues.

Step 9: Finalise and implement monitoring approach.

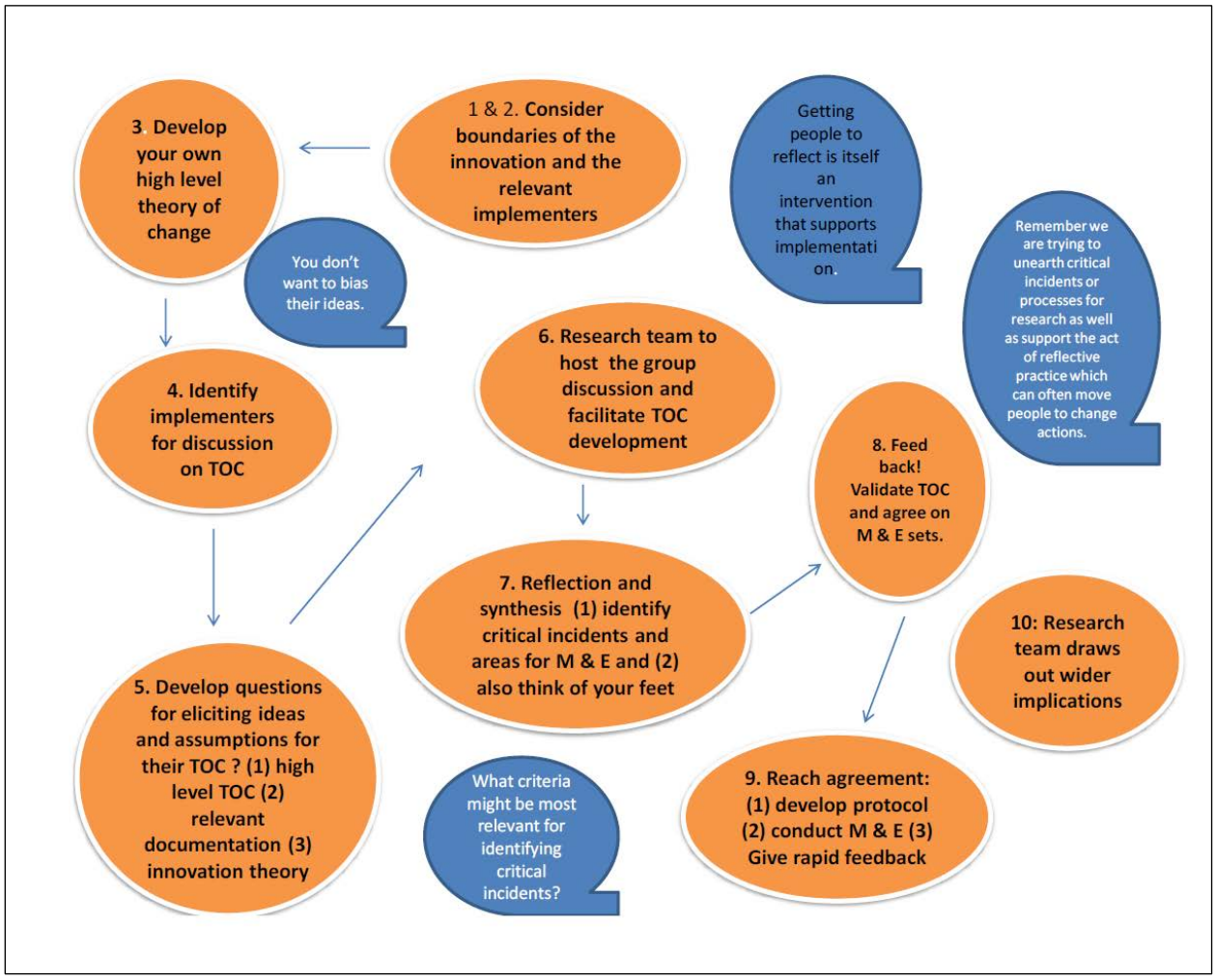
Once agreement is reached with district managers on which issues to monitor over time (e.g. people, processes, events) we will then finalise relevant monitoring tools and approaches. Our monitoring approach must allow us to identify factors or influences outside of our original theory of change, including any 'unintended consequences of change'. As is relevant, additional submissions will be made for ethical approval of newly identified tools or approaches. We will then implement the monitoring activities, possibly in collaboration with local actors. In Tanzania the theory of change will provide a framework for identifying indicators for ongoing monitoring within WP3, and once these indicators have been identified, appropriate tools and data sources will be

determined.Tanzania will identify these indicators in the original protocol for Tanzania based on the high level theory of change.

Step 10: Feedback, review and further monitoring.

The monitoring information will be fed back speedily to district managers, to allow appropriate action to be taken to tackle any challenges and support further implementation. The TOCs will also be reviewed over time, in consultation with the managers, to identify any revisions needed better to reflect practice and changing assumptions. Finally, additional monitoring activities will be developed as appropriate.

Diagram 1: UNITAS' Ten steps for developing a Theory of Change



Once we have developed and started monitoring theories of change for the individual innovation cases, we will also seek to develop an overarching district-level ToC centred on primary health care (PHC TOC), in which we will examine how managers are thinking about the different individual innovation cases and the ways in which they are linking to each other and supporting the system. We will similarly follow steps 1-10 for developing this ToC with managers. [Extracted from UNITAS' project protocol]

APPENDIX 3: ToC question guide and focus group engagement

Contextual Mapping guide

The context mapping will entail information on:

a) Socio-economic, socio-demographic and population health profile e.g.

- Deprivation index
- Urban rural mix
- Employment
- Possibly access to housing, water, education, transport etc**.**
- Facility crude death rate (District Health Barometer, HST)
- Burden of disease

b) Key health performance indicators

- Stillbirth rate (District Health Barometer, HST)
- Peri-natal mortality rate (District Health Barometer, HST)
- Facility crude death rate (District Health Barometer, HST)
- Utilisation rates

c) Health district governance structures & facility network maps of:

- governance structures at different levels of the DHS, lines of authority and links to parallel political structures
- all facilities and dedicated health programmes, and lines of authority

- The percentage of local areas with community decision-making structures in which health concerns are discussed
- The frequency of the meeting of structures
- The percentage of local area committees with clear terms of reference

e) District management staffing, skills and experience

- Does the district have a functional district management team*?*
- Are there clearly defined terms of reference for district management structures?

- The frequency of district health management team meetings
- The percentage of district management team members who understand their functions and tasks as laid down in the terms of reference.
- **Relevant managerial skills:**
- Have district managers received some form of appropriate management training? Describe the training.
- Have district management health management teams received training in critical interpersonal skills and technical skills? [Personnel and financial management / team work and communication /human resource and public health management training?]

g) Health resourcing indicators

- Issues on expenditure / budgeting etc.
- Issues on human resource availability
- Staffing levels
- Percentage of vacant posts within the district
- Availability of infrastructure

h) **District functioning**

- The number of supervision visits per month from the hospital to the primary level (Define the standard number of visits)
- Number of existing contractual arrangements with the private sector (hospitals, GPs, nurses, pharmacists, ancillary service suppliers etc.) in the districts
- Types of contractual arrangements in the district [18]

[18]151. Ibid.

APPENDIX 4: Actor map guide

Guide for mapping actors, lines of authority and accountability, and decision-making space.

1. **Actor background**

- Explore:
    - Current designation and contact details
    - Length of time in post
    - What led you here?(Brief background/relationship with the Health System and why the participant is in their current posts)

2. **Actor mapping**

2.1. Draw an organogram with the participant, and from their perspective, visually identify:

- 'Who is who' (the actors within the system) and how the participant 'fits in'.
- Include fora, committees, meetings, networks and other decision-making spaces as part of the diagram.

2.2. Guided by the organogram, explore:

- 'What the actors do' (roles and responsibilities of the actors depicted).
- Relationships between actors, committees, meetings etc identified.

3. **Authority and accountability lines**

3.1. Start to draw lines between actors, committees, meetings etc. using different colours, to highlight 'types' of relationship, e.g. support, collaborate, mentor, manage, report to etc. In this way, the organogram can be developed into a map of accountability and authority.

3.2. In relation to the actors and relationships depicted, explore:

- Decisions that can be made and Who is involved in the making of these decisions?

(Where appropriate) explore functions and decisions irt:

a. health workforce (inc. hiring, firing, contracts),
b. financing (inc. purchasing, remuneration),
c. leadership and governance (inc. reporting, authorisation lines),
d. service delivery (inc. functioning of teams),
e. medicines and technologies (inc. supply chain management), and
f. Information management (inc. systems, data capture and reporting) [19].

[19] 151. Ibid.

APPENDIX 5: Decision space mapping guide

Decision space mapping guide for district managers / sub district managers and district specialists

'Decision space' is the range of effective choice that is allowed by the central authorities (national and provincial government) to be utilized by local authorities (district and sub district management).

Range of 'decision space' in financial decisions

- Do you as an individual have the ability to develop your own criteria for the allocation of budgets or do they have to follow district / provincial or national instructions?
- Do you as part of the district / sub district management collective have the ability to allocate budgets?
- In preparing the budget who else works with you to make decisions about allocations
- When you submitted your budget last year / this year what happened?
- Are you able to influence the approval of your budget proposals? (e.g. meetings with the province, forums for engagement etc.)
- Once your budget is approved can you make re-appropriations if necessary? What procedures do you have to follow in order to do so?
- What criteria do you use to allocate your budgets?

Range of 'decision space' at the level of the service organizations

- Are you able to modify service programs with the support of the district office / provincial / national office? Explain
- In the last year did you (and your staff) initiate any new programs or new ways of providing services that were not already in existence or ordered by the district office / Provincial Health Department or the NDoH?
- If you disagree with the District/ Provincial Department of Health or MOH program managers' priorities (such as, required activities such as vaccinations, malaria, tuberculosis, family planning, HIV/AIDS), what do you do?

- How often do you and your staff receive directives, memos and telephoned instructions from the central administration and Directors for priority programs?
- What effect do these directives have on your planned activities?
- During the last year, were you able to make budgeting decisions using the information on human resources, expenditures, and utilization?
- Do you have a District Procurement Committee to procure/purchase your drug and supply needs?
- Have you initiated public/private partnership to improve access, quality and/or efficiency of health services in your district?: Yes___No___
    - If yes, describe the initiative?: _____
- Have you prepared a contract with private sector providers? : Yes___No____ If so, have you had any problems with the contracts? Explain_____
- Have you had training in contracting for public/private partnership? Please explain

Range of 'decision space' in Human Resources

- Can you hire (contract), promote, substitute, transfer, discipline and fire staff for which you have sanctioned? Up to what grade?
- Have you proposed any of the above to your superiors for staff in the past year? Were your proposals approved?
- Do you have a district / sub district selection committee? Do you consult them regarding vacant positions?
- How would you characterize your relationship with the province?
- How would you characterize your relationship with staff in the facilities?
- What methods do you use for performance evaluation of senior staff?
- Can you give rewards for good performance? What kind?[20]

[20] 151. Ibid.

APPENDIX 6: Additional guiding questions for in-depth engagements on DCSTs

□□ Please can you describe□□ your overall vision/goal in/for the DCSTs implementation?

□□ What are the key activities you will implement to achieve that vision/goal and who will be involved in implementing them and in taking action to achieve that vision/goal?

□□ What assumptions underpin the selection of these activities in relation to this vision/goal?

□□ What assumptions underpin the actors you will involve, or expect to play a role, and the expectations you have of their role in taking action towards the vision/goal?

<u>Use "Why" repeatedly to understand the assumptions of actors in the DCST implementation</u>

- Why do you think these actors are important for your goal, vision and activities
- Why do you think your activities are important in achieving the set goal/ vision

- In your experience, are other actors involved in the DCSTs implementation aware of your role, and activities?
- Are they aware of the need to work with you?
- In your view what will be the benefits or costs of actors not participating in the DCSTs implementation and processes of improving quality of care for example? [21]-[22]

[21] 151. Ibid.

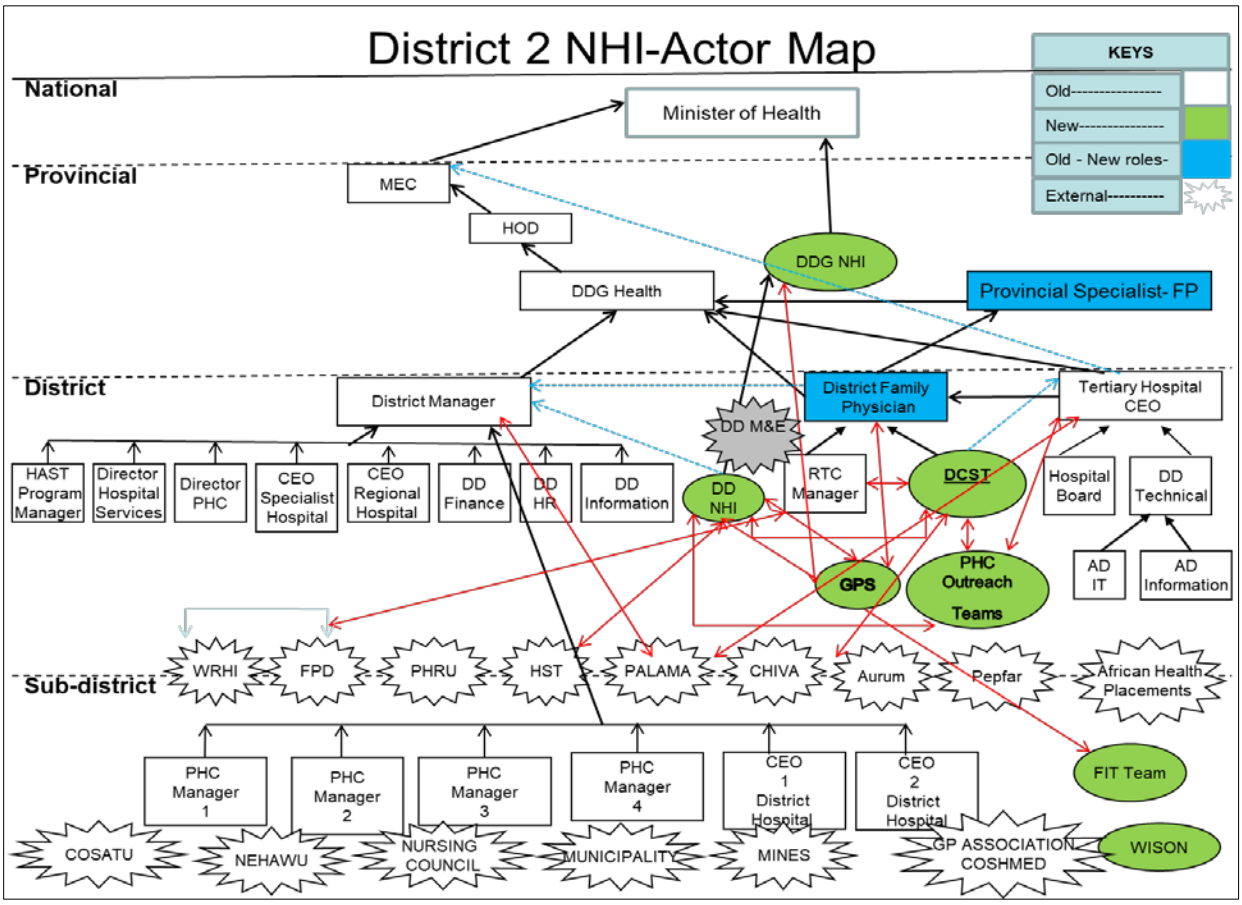
[22] Vogel. Review of the use of Theory of Change in international development. DFID, 2012.

APPENDIX 7: ToC data extraction template – DCST tracer

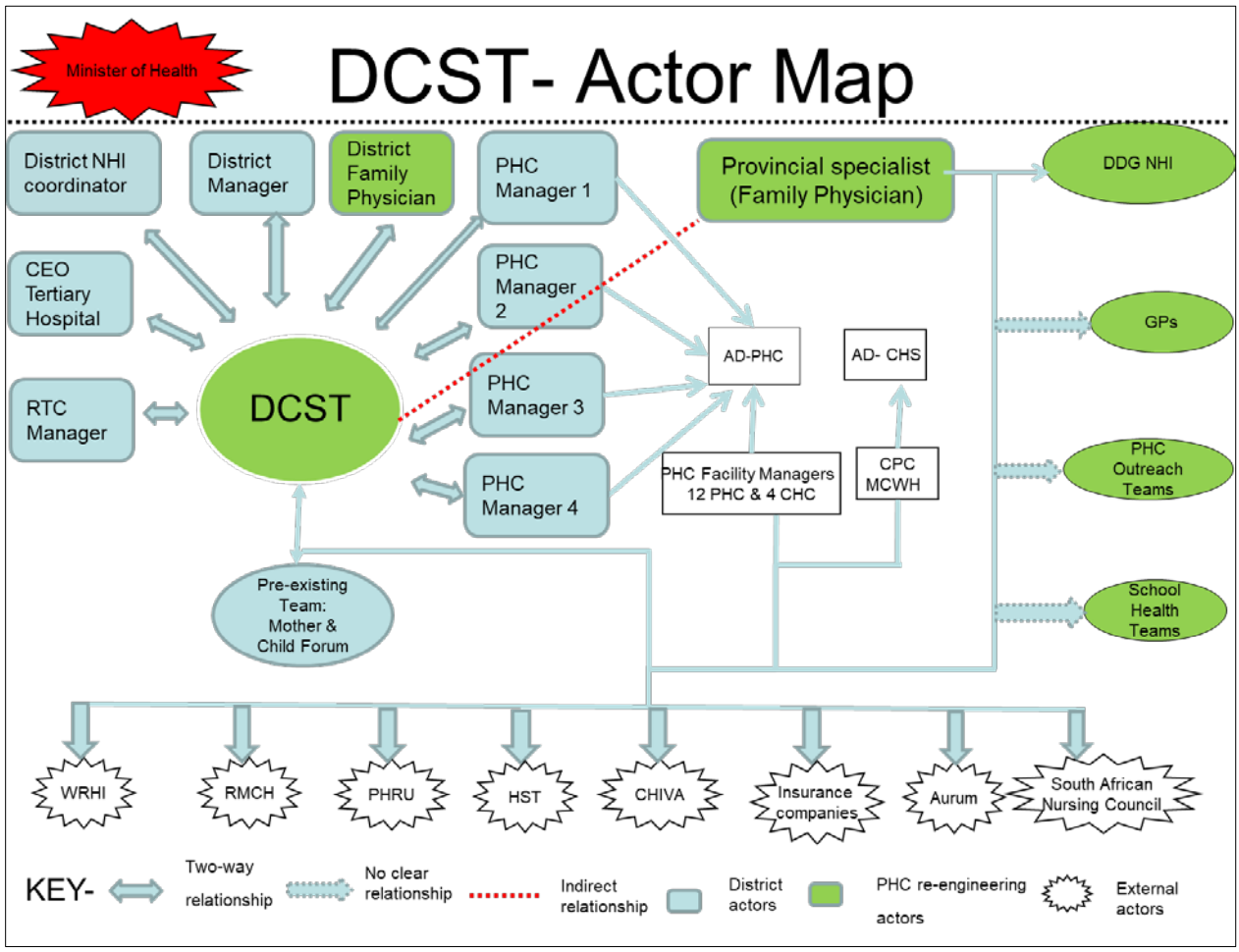
Themes/Actor	Actors		Own Notes
Context of the interviewee	CEO		
	DCST		
	FP		
	PHC manager		
	DNHI-coordinator		
How did they find out about the innovation, was it introduced to them?			
What is the desired change / goals of the management strengthening			
Who are the actors involved in the implementation of the management strengthening and to bring about change and why?			
Reporting lines and organogram.			
Who are the beneficiaries of the DCSTs			
Key assumptions and how does the respondent think that the innovation will bring about change.			
Key activities / processes / roles by the DCSTs **What activities are needed to bring about change and what or**			

what activities are they currently engaged in.			
Training related to the referral system done so far			
Realities / challenges of implementation			
Key understanding and interpretation of the construct DCSTs			
Timeline issues (see table 2 below)			
Actual real life experiences of intended / unintended consequences and effects (what has been observed as effects in the intervention? AND opportunities, successes as stated by the respondent			
Ideas for monitoring suggested by the respondent? What do you think should be monitored?			
Are actors in any way being innovative in their thinking or adapting to context?			
Interaction with other people in the district			
The future			
Own notes			

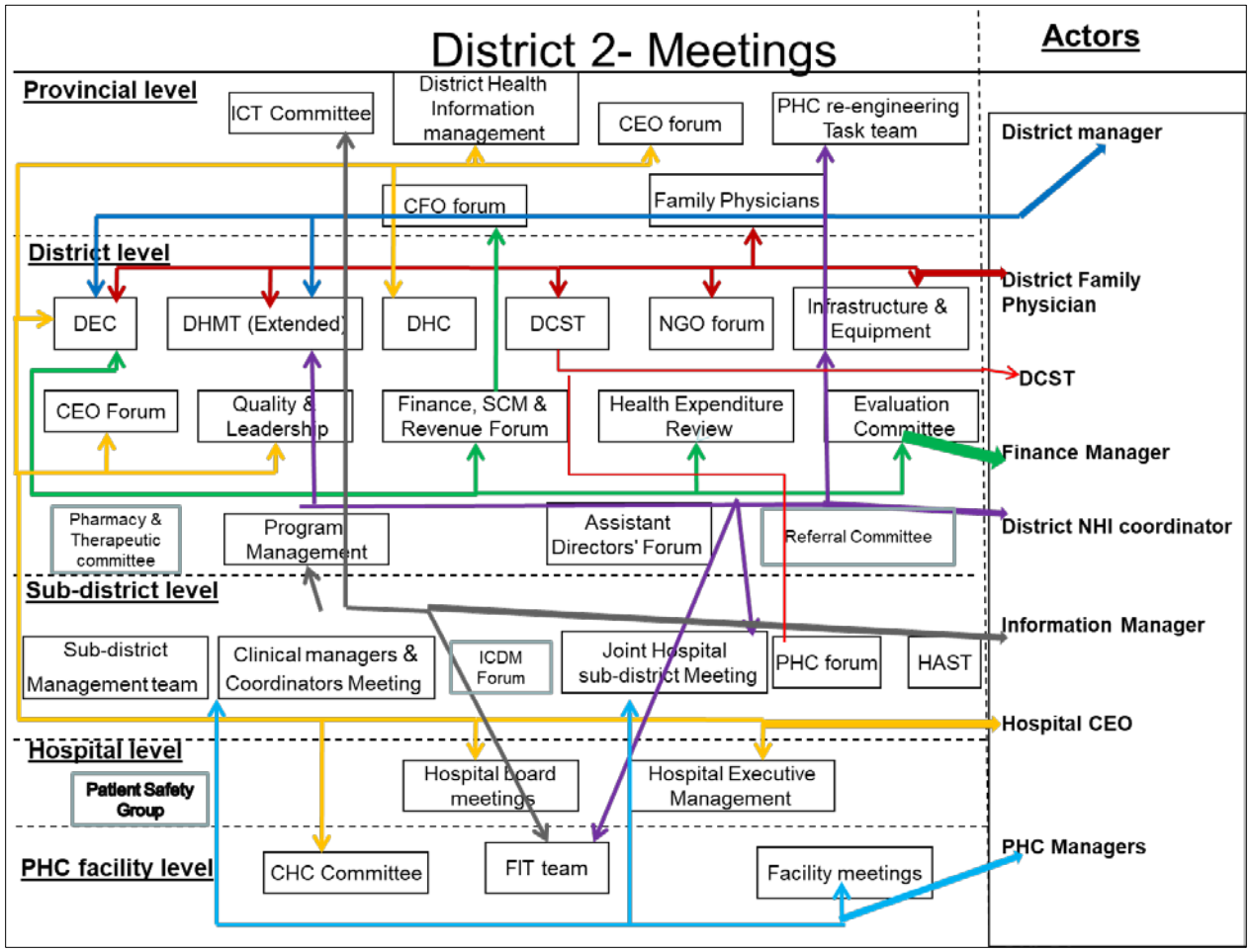
APPENDIX 8: District and sub-district level actor maps



APPENDIX 9: DCST actor map



APPENDIX 10: District and sub-district level meeting map



APPENDIX 11: PhD Ethics Clearance Certificate

R14/49 Ms Kafayat Oboirien et al

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M140623

NAME: (Principal Investigator)	Ms Kafayat Oboirien et al
DEPARTMENT:	School of Public Health Centre for Health Policy
PROJECT TITLE:	Teamwork in Health Care and Health Systems' Strengthening in Decentralisation Health Systems: Finding Lessons from the District Clinical Speacilist Teams' Implementation in South Africa
DATE CONSIDERED:	27/06/2014
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Jane Goudge and John Eyles
APPROVED BY:	Professor P Cleaton-Jones, Co-Chairperson, HREC (Medical)
DATE OF APPROVAL:	08/09/2014

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature

Date 08/09/2014.

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX 12: INFORMATION SHEET and CONSENT FORM.

Information sheet for participants

Universal coverage in South Africa (UNITAS):

Monitoring the progress of policy implementation at both the national and district levels, with an emphasis on identifying implementation problems and serving as an 'early warning system' for policy makers and implementers

Introduction and background

Hello. My name is ..... and I am a member of a research team from the Health Economics Unit, University of Cape Town, the Centre for Health Policy, University of the Witwatersrand and the Africa Centre for Health and Population Studies, University of KwaZulu Natal. I would like to invite you to participate in a research project, entitled Universal Coverage in South Africa: Monitoring and Evaluating progress.

The specific research is part of a broader international project entitled Universal Coverage in Tanzania and South Africa: Monitoring and Evaluating progress. In both countries, we seek to track the process through which new policies and programmes aimed at improving the performance of the health system are implemented. We aim to compare these experiences within and across countries to learn about the sorts of factors that influence how implementation

occurs and what achievements result from these policies. We also hope to draw conclusions about how to support their implementation in the future.

In South Africa we are working in selected National Health Insurance pilot sites. We are particularly interested in understanding the challenges and successes that those responsible for implementation face and by working together hope to support the implementation of the new policies and programmes. We also intend to talk to health managers and policy makers at provincial and national level about what we observe and learn about these experiences, and also to share South African experiences with colleagues working elsewhere.

As part of this work we would like to talk to you now about your work and understanding of some of the new policies and programmes that have been introduced as part of PHC re-engineering and NHI. Specifically we would like to talk to you about XXXX (insert innovation / reform) today.

We also hope it would be possible to talk to you again – by yourself, and perhaps in discussions with others, as well as possibly accompanying you in your work at some times. This will allow us to better understand what happens in implementing these policies or programmes.

From time to time we will share some of our observations and reflections on these experiences with colleagues in this district. We hope this sort of feedback will help us check if our understandings reflect those of colleagues in the district, but also may help the district managers in thinking about how to take forward implementation.

I am inviting you to participate in this research and hope that you will agree to be a participant of the research, thereby contributing to efforts to monitor the progress of different innovations.

Confidentiality and consent

If you agree to take part, you will be invited to be part of a group discussion or be interviewed by me face-to-face or telephonically, as you prefer. If you consent to take part, I would like to tape record the engagement. In order to ensure confidentiality I will download the audio tape to my computer, which is locked by a password. I will then erase the material from the tape recorder. When I type out the notes from the audio tape, I will not use your name. Instead, I will use an invented name or a number so that nobody can identify you. After notes have been made from the audio tape, the audio recording will be destroyed. Any hard-copy documents relating to the research (e.g. printed out interview notes), will also only be accessible to the research team and kept in a secure location. In order to preserve confidentiality, your name or other personal identifiers will also not be used in reports of the findings of the research.

Your participation is completely voluntary; you are not obliged to participate. A consent form will be given to you to ask whether you consent to partake in the research and whether you consent to the recording of interviews. If you do not wish to be recorded, notes will be written by hand. If you do consent you may refuse to answer a question during our engagement or you may end our engagement at any point if you would like to. There will be no follow up on this matter.

<u>For group discussions:</u> There is no confidentiality in group discussions because there are a number of people involved. However, once the group discussion has happened, we will follow the same procedure as for interviews: your name and other personal identifiers will not be used;

and recorded material (until it is destroyed) and hard-copy documents will be stored on a password protected server, available only to members of the research team.

Approval for the Study

Permission to carry out this project was sought from the:

- London School of Hygiene and Tropical Medicine
- South Africa - University of Cape Town Human Research Ethics Committee
- University of the Witwatersrand, Human Research Ethics Committee: +27 11-717-1234
- University of Kwazulu Natal Biomedical Research Ethics Committee +27 31 2604769

Contact details

This research has been approved by the University of Cape Town Human Research Ethics Committee. If you have any questions about your rights as a study participant, or questions or concerns about any aspect of the study, you may contact the Committee's office on +27 21 406 6338. We will also be happy to answer any question you have about this study. If you have any questions, please contact the principal investigator: Prof. Lucy Gilson, Department of Public Health and Family Medicine, University of Cape Town. E-mail: lucy.gilson@uct.ac.za. Telephone: (021) 406 6272.

CONSENT FORM: In-depth Interviews

Title of Research Project: <u>Universal coverage in Tanzania and South Africa: monitoring and evaluating progress</u>

The project seeks to understand the progress of policy implementation at both the national and district levels in South Africa and Tanzania, with an emphasis on identifying implementation problems and serving as an 'early warning system' for policy makers and implementers.

The study has been described to me in a language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way. I understand there will be no reimbursement for participation.

At all times the researcher will keep the source of the information confidential and refer to me and my words by a number or invented name. The written transcripts or notes of the actual interview will only be released to co-researchers who will assist in the data analysis, the number or invented name will be used in these transcripts.

If you consent to partake in the study please sign here:

Participants name ……..

Participants signature…….

Date……

Witness name……..

Witness signature…….

Date……

Should you have any questions regarding this study in South Africa or wish to report any problems you have experienced related to the study, please contact the study coordinator at the University of Cape Town: Prof. Lucy Gilson, Department of Public Health and Family Medicine, University of Cape Town. E-mail: lucy.gilson@uct.ac.za. Telephone: (021) 406 6272.

CONSENT TO TAPE IN-DEPTH INTERVIEWS

If you consent to partake in the study could you please tick an option regarding audio tape-recording:

I have read the project information sheet and it has been properly explained to me and I understand that it is up to me whether or not the interview is tape-recorded.

The purpose of recording the interview is to capture accurately all the information that will be given.

It will not affect in any way how the interviewer treats me if I do not want the interview to be tape-recorded.

I understand that if my participation is tape-recorded that the tape will be destroyed two years after the interview.

I understand that I can ask the person interviewing me to stop tape recording, and to stop the interview altogether, at any time.

I understand that the information that I give will be treated in the strictest confidence and that my name will not be used when the interviews are typed up.

___ Yes, I agree to be **audio taped** during my participation in this study.

___ No, I do not agree to be **audio taped** during my participation in this study.

_____

Interviewee's name and signature

_____

Interviewer's name and signature

Date:_____

<u>Witness consent</u> (in the case that the interviewee is illiterate)

I _____(witness name) hereby confirm that this information sheet has been read and explained to _____(interviewee name) and that the interviewee hereby gives their consent, willingly and freely for the interview to take place and for it to be tape recorded.

_____

Witness name and signature

CONSENT TO AUDIO TAPE-RECORD GROUP DISCUSSIONS

If you consent to partake in the study could you please tick an option regarding audio tape-recording:

I have read the project information sheet and it has been properly explained to me and I understand that it is up to me whether or not the group discussion is tape-recorded.

The purpose of recording the group discussion is to capture accurately all the information that will be given.

It will not affect in any way how the facilitator treats me if I do not want the discussion to be tape-recorded.

I understand that if my participation is tape-recorded that the tape will be destroyed two years after the interview.

I understand that I can ask the person conducting the group discussion to stop tape recording, and to stop the group discussion altogether, at any time.

I understand that the information that I give will not be confidential because it will be shared as part of a group discussion.

I understand that my name will not be used when the discussion is typed up.

___ Yes, I agree to be **audio taped** during my participation in this study.

___ No, I do not agree to be **audio taped** during my participation in this study.

_____

Interviewee's name and signature

_____

Interviewer's name and signature

Date: _____

Witness consent (in the case that the interviewee is illiterate). I _____(witness name) hereby confirm that this information sheet has been read and explained to _____(interviewee name) and that the interviewee hereby gives their consent, willingly and freely for the interview to take place and for it to be tape recorded.

_____

Witness name and signature

APPENDIX 13: DCST other tools: information sheet, consent form & question guide

Information sheet

Tool for understanding Teamwork (For DCSTs members and other participants)

Title of Research Project: Teamwork in health care and health systems' strengthening in decentralising health systems: finding lessons from the district clinical specialist teams' (DCSTS) implementation in South Africa.

This PhD research is located within a project; Universal coverage in South Africa and Tanzania: monitoring and evaluating progress. The UNITAS project has been engaging with actors at different levels of the health care system; seeking to monitor the progress of policy implementation of range of policy reforms such as the national health insurance (NHI) and primary health care reengineering reforms at the district level. This PhD research is seeking to take forward the implementation and functioning of the DCSTs and exploring in-depth; interesting issues such as teamwork, that have emerged based on initial engagement at the district level. In addition, there is emphasis on identifying implementation problems specific to the DCSTs' and documenting these experiences which could serve as an 'early warning system' for policy makers and implementers.

Introduction and background

Hello. My name is Kafayat Oboirien. I am a PhD student at the University of the Witwatersrand and a member of a research team from the Health Economics Unit, University of Cape Town, the Centre for Health Policy, University of the Witwatersrand and the Africa Centre for Health and Population Studies, University of KwaZulu Natal. I would like to invite you to participate in my PhD research project, entitled Teamwork in health care and health systems' strengthening in

decentralising health systems: finding lessons from the district clinical specialist teams' (DCSTS) implementation in South Africa.

In South Africa, the UNITAS project has been working in selected National Health Insurance pilot sites particularly interested in understanding the implementation of Primary Health Care (PHC) and National Health Insurance (NHI) reforms. This PhD research is nested in the UNITAS project and seeking to understand particularly the processes and the relationships that shape teamwork in the activities and functioning of the DCSTs in your district.

Specifically, today we would like to hear your opinion about the implementation and functioning of the DCSTs in this district and how relationships are unfolding between the DCSTs and other actors within the district. The semi-structured tool should take between 60-90 minutes to complete. We may approach you to repeat this assessment in a year's time. From time to time, we will share some of our findings, observations and reflections on these experiences with colleagues in this district. We hope this sort of feedback will help us check if our analysis and understandings reflect your experiences, and may help the district managers in thinking about how to take forward implementation.

Confidentiality and consent

If you agree to take part, you will be invited to be part of a group discussion or be interviewed by me face-to-face or telephonically, as you prefer. If you consent to take part, I would like to tape record the engagement. In order to ensure confidentiality I will download the audio tape to my computer, which is locked by a password. I will then erase the material from the tape recorder. When I type out the notes from the audio tape, I will not use your name. Instead, I will use an invented name or a number so that nobody can identify you. After notes have been made from the audio tape, the audio recording will be destroyed. Any hard-copy documents relating to the

research (e.g. printed out interview notes), will also only be accessible to the research team and kept in a secure location. In order to preserve confidentiality, your name or other personal identifiers will also not be used in reports of the findings of the research.

Your participation is completely voluntary; you are not obliged to participate. A consent form will be given to you to ask whether you consent to partake in the research and whether you consent to the recording of interviews. If you do not wish to be recorded, notes will be written by hand. If you do consent you may refuse to answer a question during our engagement or you may end our engagement at any point if you would like to. There will be no follow up on this matter.

For group discussions: There is no confidentiality in group discussions because there are a number of people involved. However, once the group discussion has happened, we will follow the same procedure as for interviews: your name and other personal identifiers will not be used; and recorded material (until it is destroyed) and hard-copy documents will be stored on a password protected server, available only to members of the research team.

Approval for the Study

Permission to carry out this PhD project was sought from the:

- London School of Hygiene and Tropical Medicine
- South Africa - University of Cape Town Human Research Ethics Committee
- University of the Witwatersrand, Human Research Ethics Committee: +27 11-717-1234

- University of Kwazulu Natal Biomedical Research Ethics Committee +27 31 2604769

Contact details

This research has been approved by the University of Cape Town Human Research Ethics Committee. If you have any questions about your rights as a study participant, or questions or concerns about any aspect of the study, you may contact the Committee's office on +27 21 406 6338. We will also be happy to answer any question you have about this study. If you have any questions, please contact the principal investigator: Prof. Lucy Gilson, Department of Public Health and Family Medicine, University of Cape Town. E-mail: lucy.gilson@uct.ac.za. Telephone: (021) 406 6272.

CONSENT FORM

Additional tool for understanding Teamwork (DCSTs members and other participants)

Title of Research Project: Teamwork in health care and health systems' strengthening in decentralising health systems: finding lessons from the district clinical specialist teams' (DCSTS) implementation in South Africa.

This PhD research is seeking to take forward the implementation and functioning of the DCSTs and exploring in-depth; interesting issues that have emerged based on initial engagement at the district level. In addition, there is emphasis on identifying implementation problems specific to the DCSTs' and documenting these experiences for lesson-learning of good practices and as an 'early warning system' for policy makers and implementers.

The study has been described to me in a language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way. I understand there will be no reimbursement for participation.

At all times the researcher will keep the source of the information confidential and refer to me and my words by a number or invented name. The written transcripts or notes of the actual interview will only be released to co-researchers who will assist in the data analysis, the number or invented name will be used in these transcripts.

If you consent to partake in the study please sign here:

Participants name ……..

Participants signature…….

Date……

Witness name……..

Witness signature…….

Date……

Should you have any questions regarding this study in South Africa or wish to report any problems you have experienced related to the study, please contact the study coordinator at the University of Cape Town: Prof. Lucy Gilson, Department of Public Health and Family Medicine, University of Cape Town. E-mail: lucy.gilson@uct.ac.za. Telephone: (021) 406 6272.

CONSENT TO TAPE IN-DEPTH INTERVIEWS - *DCSTs members and other participants*

If you consent to partake in the study could you please tick an option regarding audio tape-recording:

I have read the project information sheet and it has been properly explained to me and I understand that it is up to me whether or not the interview is tape-recorded.

The purpose of recording the interview is to capture accurately all the information that will be given.

It will not affect in any way how the interviewer treats me if I do not want the interview to be tape-recorded.

I understand that if my participation is tape-recorded that the tape will be destroyed two years after the interview.

I understand that I can ask the person interviewing me to stop tape recording, and to stop the interview altogether, at any time.

I understand that the information that I give will be treated in the strictest confidence and that my name will not be used when the interviews are typed up.

___ Yes, I agree to be **audio taped** during my participation in this study.

___ No, I do not agree to be **audio taped** during my participation in this study.

_____

Interviewee's name and signature

_____

Interviewer's name and signature

Date:_____

Witness consent (in the case that the interviewee is illiterate)

I _____(witness name) hereby confirm that this information sheet has been read and explained to _____(interviewee name) and that the interviewee hereby gives their consent, willingly and freely for the interview to take place and for it to be tape recorded.

_____

Witness name and signature

APPENDIX 14: Summary of maternal and child health indicators for the three study sites

Indicators	Averages		Year						% Change	Expected change
			2011	2012	2013	2014	2015	2016		
Antenatal visit before 20 weeks rate (%)	National level (49 districts)		40.2	44	50	53.9	61.2	65.2	62.19	Positive
	District level - aggregated by:	High DCST complement (10)	45.24	47.6	52.92	57.18	64.68	68.7	51.86	
		Medium DCST complement (30)	42.4	46.7	52.5	55.5	62.3	66.3	56.37	
		Low DCST complement (9)	44.8	49.2	53.8	56.9	63.7	67.7	51.12	
	Study site 1		48.3	46.5	58.8	59.9	68.7	71.2	47.4	
	Study site 2		43.2	39.3	49.3	55.8	69.5	70.7	63.66	
	Study site 3		25.5	31.5	34.4	41.8	60.1	67.1	163.1	
Maternal mortality rate (per 100 000 live births)	National level		144.9	132.9	133.3	132.5	119.1	116.9	-25.12	Negative
	District level - aggregated by:	High DCST complement	132	115.5	128.8	123.6	113.9	108.5	-17.80	
		Medium DCST complement	157.8	135.2	134.4	165.8	128.2	117.8	-25.35	
		Low DCST complement	107	127.4	114.5	111.5	92.7	85.6	-20.00	
	Study site 1		194	279.4	208.3	186	191.7	178.1	-8.1	
	Study site 2		258	222.3	257.4	232	161.1	159.6	-38.14	
	Study site 3		89	68.5	229.7	198	244.7	196.9	121.2	
Immunisation coverage under 1 year (%)	National level		95.2	83.6	84.4	89.8	89.2	82.3	-13.55	Positive
	District level - aggregated by:	High DCST complement	92.1	91.4	85.4	89.5	89.5	82.3	-10.64	
		Medium DCST complement	92.7	93.2	81.2	86.7	86.3	81.4	-12.19	
		Low DCST complement	91.3	93.7	78.3	84.3	84.8	77.2	-15.44	
	Study site 1		88.2	103.7	96.3	91.2	72.9	62.3	-29.4	
	Study site 2		71	69.6	79.8	86.8	89.8	74.4	4.79	
	Study site 3		90.3	73.6	58	74.9	88.9	78	-13.6	
(Early) neonatal mortality rate (per 1000 live births)	National level		10.2	10.2	10.1	10.1	10.5	9.9	-2.94	Negative
	District level - aggregated by:	High DCST complement	11.2	9.4	10.2	10.3	9.53	9.9	-11.61	
		Medium DCST complement	11.1	10.7	11.1	10.8	10.7	9.5	-14.41	
		Low DCST complement	8.2	7.9	9.9	10.7	10.8	11.7	42.68	
	Study site 1		7.2	9.1	13.2	9.1	10.3	8.5	18.1	
	Study site 2		14.3	14	16.2	11.8	9	9.8	-31.47	
	Study site 3		20.8	20.3	13.3	13.7	18.1	15.1	-27.4	
Severe acute malnutrition (SAM) fatality rate under 5 year	National level		--	12.7	11.3	11.6	8.9	8.0	-37.01	Negative
	District level - aggregated by:	High DCST complement	--	11.2	8.1	10.5	8.4	7.6	-32.20	
		Medium DCST complement	--	12.8	12.9	12.7	9.3	8.6	-32.62	
		Low DCST complement	--	14.3	11.2	10.8	8.0	4.8	-66.58	

	Study site 1	--	9	6.8	7	6.1	4.2	-53.3	
	Study site 2	--	8.7	12.2	10.7	10.8	9.4	8.05	
	Study site 3	--	21.4	21.9	11.6	11	11.8	-44.8	

APPENDIX 15: List of Publications

- Oboirien KO, Harris B, Eyles J, Orgill M, McIntyre D, Chimbindi N, Goudge J. (2015) Understanding roles, enablers and challenges of District Clinical Specialist Teams in strengthening primary health care in South Africa. In: Padarath A, King J, English R, editors. ***South African Health Review 2014/15***. Durban: Health Systems Trust; 2015. URL: http://www.hst.org.za/publications/south-african-health-review-2014/15.[Book chapter]
- Oboirien KO, Harris B, Goudge J and Eyles J. (2018) Implementation of District-based Clinical Specialist Teams in South Africa: Analysing a new role in a transforming system. ***[BMC Health Services Research]***
- Oboirien KO, Harris B, Goudge J and Eyles J. Can institutional entrepreneurship strengthen clinical governance and quality improvement: A case study of a District-based Clinical Specialist Team in South Africa. ***[Accepted September 2019 - Health Policy and Planning]***

APPENDIX 16: Presentations

- Oboirien KO, Harris B, Eyles J and Goudge J (2018). Analysing change through institutional entrepreneurship: A case study of a District-based Clinical Specialist Team in South Africa. Fifth Global Symposium on Health Systems Research; 12-16 October 2018, Liverpool. [E-Poster]
- Oboirien KO, Harris B, Goudge J and Eyles J (2017). Strengthening clinical governance in Low and Middle Income Countries: A systematic (scoping) Review. Global Evidence Summit; 13-15 September 2017, Cape Town. [Poster presentation]
- Oboirien KO (2017). Strengthening clinical governance in Low and Middle Income Countries: A systematic (scoping) Review. Global Evidence Synthesis Initiative [Webinar presentation]
- Oboirien KO, Harris B, Goudge J and Eyles J (2016). Implementation of District based Clinical Specialist Teams in South Africa: Analysing new roles in a transforming system. Fourth Global Symposium on Health Systems Research; 14-18 November 2016 Vancouver. [E-Poster]
- Feedback on DCST implementation in South Africa: Managers' workshop Johannesburg – November 2015.
- K.O Oboirien et al, (2014) Conceptualising health teams in decentralised health systems – A case of District based Clinical Specialist Teams in South Africa, *Accepted for Poster presentation in the Health System Global 2014, Cape Town*
- Universal Coverage in Tanzania and South Africa: Monitoring and evaluating Progress (UNITAS) Team Workshop - Cape Town; March 2013.

APPENDIX 17: Other complementary presentation and publication

- Anne Mills, Ermin Erasmus, Jane Macha, Ayako Honda, Fahdi Dkhimi, Kafayat Oboirien, Michelle Remme, Di McIntyre (2016). Pursuing Universal Health Coverage through multiple concurrent reforms: sequencing, capacity and politics in Tanzania and South Africa. Fourth Global Symposium on Health Systems Research; 14-18 November 2016 Vancouver.