Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

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ABSTRACT

Title: Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

Lesotho has the second-highest prevalence of HIV-infection in the world (MOH, 2017).The successful implementation of HIV/AIDS treatment guidelines has a potentially optimal impact on HIV/AIDS management (Kripke *et al.,* 2016). Therefore, there is a need to evaluate the factors affecting the implementation of the fifth edition of the 2016 HIV/AIDS treatment guidelines by focusing on the implementation process, drivers and barriers in Lesotho (Damschroder *et al.,* 2009:50; Fixsen *et al.*, 2005). It is also essential to formulate an implementation framework to implement the HIV/AIDS treatment guidelines suitable for Lesotho and other resource-limited settings. The specific research objectives of the study include:

- To explore current HIV/AIDS treatment guideline implementation processes in Lesotho.
- To investigate how the implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.
- To identify barriers to the implementation of HIV/AIDS treatment guidelines in Lesotho.
- To develop a framework for the implementation of HIV/AIDS treatment guidelines in resource-limited countries such as Lesotho.

A cross-sectional study was implemented in the public healthcare sector of Lesotho. The study population consisted of healthcare professionals from the HIV/AIDS programme (N=5), the District Health Management Team (DHMT) (N=30) and the primary healthcare (PHC) facilities (N=330). Researcher-designed, structured questionnaires were completed during face-to-face interviews with the HIV/AIDS programme and DHMT healthcare professionals. Self-administered questionnaires were completed by healthcare professionals at the PHC facilities. Data collection took place between May and December 2018.

A total of five healthcare professionals at the HIV/AIDS programme, 27 at the DHMT and 116 at the PHC facilities participated in the study. Process-related results indicate that an implementation plan was available, as reported by all healthcare professionals at the HIV/AIDS programme (n=5), DHMT 9 (33.3%) and PHC facilities 8 (9.4%). PHC managers also indicated that they had copies of the 2016 HIV/AIDS treatment guidelines 70 (80.5%) and reported daily use 60 (69.0%). The

results show that PHC managers 50 (57.5%) confirmed that patient care and treatment were given according to the HIV/AIDS treatment guidelines.

The results related to implementation drivers show that all healthcare professionals at the HIV/AIDS programme (n=5), 55.6% (n=15) at the DHMT and 75.9% (n=22) at the PHC level as well as 52.3% (n=45) of PHC managers were trained regarding changes made to the 2016 HIV/AIDS treatment guidelines. Healthcare professionals at the HIV/AIDS programme (n=5) indicated that they supervised DHMT healthcare professionals on a quarterly basis. DHMT healthcare professionals 23 (88.5%) indicated that they supervised PHC managers at the PHC facilities. PHC managers 52 (61.2%) also supervised healthcare professionals regarding the treatment of HIV/AIDS through the use of treatment guidelines. Feedback was provided after every supervision at all levels; this was confirmed by healthcare professionals at the HIV/AIDS programme (n=5) and the DHMT 23 (85.2%), and PHC managers 54 (65.9%).

The following implementation barriers were identified by healthcare professionals at all levels: personnel-related (lack of different types of personnel at PHC facilities), knowledge and competency (insufficient management skills and insufficient communication skills), resource-related (no or unreliable internet access and no or unreliable e-mail services) and financially-related (lack of funds to acquire highly technologic health information systems and lack of budget for new posts for healthcare personnel).

It can, therefore, be concluded that there was an implementation plan, even though it was not fully distributed – PHC managers confirmed that patient care and treatment was carried out according to the HIV/AIDS treatment guidelines. It can also be concluded that training regarding changes made to the 2016 HIV/AIDS treatment guidelines took place at all levels; however, not all healthcare professionals at the DHMT and the PHC were trained. It can also be concluded that supervision and feedback were provided, which is a strength that can be built on.

The implementation barriers identified in Lesotho will assist decision-makers in future healthcare planning to prevent possible barriers to the implementation of forthcoming HIV/AIDS treatment guidelines. Decision-makers will have to focus specifically on identified personnel-related, knowledge and competency, resource-related and financially-related barriers. An implementation framework was also formulated based on the literature and the empirical results of the implementation processes, drivers and barriers.

Key terms: treatment guidelines, implementation, process, drivers, barriers, training, supervision, feedback, competency, knowledge, organisation, financial, resources, framework.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACE	Academic Centre for Evidence-based Practice
AHF	AIDS Healthcare Foundation
ART	Antiretroviral Therapy
ARV	Antiretroviral
BCMF	Baylor College of Medicine Children's Foundation
CDC	Centre for Disease Control
CD4	T-lymphocyte Bearing CD4 Receptor
CEO	Chief Executive Officer
CFIR	Consolidated Framework for Implementation Research
CHAL	Christian Health Association of Lesotho
CIHR	Canadian Institutes of Health Research
CLHIV	Children Living with HIV
COM-B	Capability, Opportunity, Motivation and Behaviour
DHMT	District Health Management Team
EACS	European AIDS Clinical Society
EBP	Evidence-based Practice
EGPAF	Elizabeth Glaser Paediatric AIDS Foundation
EPOC	Effective Practice and Organisation of Care
EQUIP	Enhancing Quality through Innovation Policy & Practice
ERIC	Expert Recommendation for Implementation Change
FRLM	Full-range Leadership Model
GRADE	Grading of Recommendations, Assessment, Development and Evaluation
GIFRS	Guidelines implementation framework for resource limited settings
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HREC	Health Research Ethics Committee
ILS	Implementation Leadership Scale
KMC	Kangaroo Mother Care
K2A	Knowledge-to-Action
LDHS	Lesotho Demographic and Health Survey
LePHIA	Lesotho Population-based Impact Assessment
MLQ	Multifactor Leadership Questionnaire
MOH	Ministry of Health (Lesotho)
MOHSW	Ministry of Health and Social Welfare (Lesotho)

MUSA	Medicine Usage of South Africa
NIRN	National Implementation Research Network
NPT	Normalisation Process Theory
NUL	National University of Lesotho
NWU	North-West University
OPD	Outpatient Department
PARiHS	Promoting Action on Research Implementation in Health Service
PEPFAR	The United States President's Emergency For AIDS Relief
PEP	Post-exposure Prophylaxis
PHC	Primary Healthcare
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
PRECEDE	Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation
PrEP	Pre-exposure Prophylaxis
PROCEED	Policy, Regulatory, and Organisational Constructs in Educational and Environmental Developments
RCT	Randomised Clinical Trials
RE-AIM	Reach, Effectiveness, Adoption, Implementation and Maintenance
RNAO	Registered Nurses' Association of Ontario
SIC	Stages of Implementation Completion
SPSS	Statistics for Windows Version 25.0
STG	Standard Treatment Guidelines
TDF	Theoretical Domains Framework
UNAIDS	Joint United Nations Programme on HIV/AIDS
VLS	Viral Load Suppression
WHO	World Health Organization

GLOSSARY

Attitude	Attitude is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person or situation. It can also be described as the way you feel or think about something or someone (Beaubien & Baker, 2004:i52; Oxford South Africa school dictionary, 2015:39).
Christian Health Association of Lesotho (CHAL)	The Christian Health Association of Lesotho is a non-governmental organisation that – in collaboration with the Lesotho Ministry of Health (MOH) – provides primary and secondary health services in Lesotho (MOH, 2014).
Comprehensive HIV/AIDS management	Comprehensive management of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) entails the prevention, care and treatment of HIV/AIDS (Kitahata *et al*., 2002:954).
Competency	Competency is aptitude based on knowledge, skills, attributes, and experiences and values (Beaubien & Baker, 2004:i52).
District Health Management Teams (DHMT)	The DHMT is the body in charge of managing a district health affairs in general, including the supervision of primary healthcare facilities. (MOHSW, 2011).The DHMT is a district supervisory level responsible for PHC facilities in a specific district.
Engaging	Engaging is the process of attracting and involving appropriate personnel to implement and use an intervention through activities such as social marketing, education, role modelling and training (Pronovost *et al*., 2008:964).
Evaluating	Evaluating is the rigorous analysis of completed or on-going activities that determine or support management accountability, effectiveness and efficiency (Pronovost *et al*., 2008:965).
Executing	Executing is carrying out or accomplishing an implementation according to plan (Damschroder *et al.,* 2009:10; Pronovost *et al*., 2008:965).
Healthcare professionals	Refers to all clinically practising professionals employed at the HIV/AIDS programme, the DHMT, and the PHC facilities (Including PHC facilities of CHAL as well as the MOH).
HIV/AIDS treatment guidelines	For this study, 'HIV/AIDS treatment guidelines' refer to any guideline of the World Health Organization (WHO) or MOH used to guide treatment of HIV/AIDS in Lesotho (WHO, 2013, MOH, 2014).
HIV/AIDS-programme	The HIV/AIDS-programme is the programme used to facilitate all HIV/AIDS-related affairs in Lesotho (MOH, 2014). HIV/AIDS programme is a section in the disease control unit of the MOH of Lesotho that is responsible

	for all activities related to HIV/AIDS. In the context of this study the term HIV/AIDS programme will be used to refer to this unit.
Implementation	Implementation is defined as "a specific set of activities that are intended to put an activity or programme of known dimensions into practice" (Fixsen *et al*., 2005:6).
Implementation barriers	Implementation barriers are any real or perceived concepts that impede intervention from taking place (Fischer *et al*., 2013:36).
Implementation drivers	Implementation drivers include competency, organisational and leadership tools that establish, sustain and support the implementation of guidelines or policies (Fixsen, 2015:8).
Implementation facilitators or enablers	Implementation facilitators are factors that promote the implementation of shared decision-making in clinical practice (Gravel *et al.,* 2006:16).
Implementation processes	Implementation processes entail planning, engaging, executing, reflecting and evaluating aimed at getting an intervention into use in an organisation (Damschroder *et al.,* 2009:10).
Implementation research	Implementation research is a scientific inquiry into questions concerning the implementation of policies, programmes or individual practices (collectively called interventions) (Eccles *et al*., 2009:18).
Leadership drivers	Leadership drivers refer to technical and adaptive leaderships that address simple and complex challenges respectively and are part of implementation drivers (Fixsen, 2015:8).
Organisation drivers	Organisational drivers are part of implementation drivers and are mechanisms that create and sustain hospitable organisational and system environments for effective services delivery (Fixsen, 2015:8).
Planning	Planning is the degree to which tasks for implementing an intervention are developed in advance (Damschroder *et al.,* 2009:10).
Primary healthcare (PHC) facilities	PHC facilities provide PHC services to communities at the community level. These services include the care and treatment of HIV/AIDS. In the context of this study, PHC facilities include the outpatient department (OPD) at hospitals where HIV/AIDS-related services are provided (MOHSW, 2011).
PHC manager	Refers to a healthcare professionals assigned managerial responsibilities.
Professional's degree	Refers to the qualification (degree) of a nurse or pharmacist – who is also registered with a statutory council.
Reflecting	Reflecting means remarks made after turning back one's thoughts on a subject or taking time reflect and debrief (Damschroder *et al.,* 2009:10).

Reports	Refer to reports (generated from data collection by data clerks at the PHC facilities) written by healthcare professionals at PHC facilities that are sent to the DHMT which will in turn sent to the HIV/AIDS programmes
Resource-limited country	A resource-limited country is a country whose resources are not sufficient to sustain the programmes it wants to implement for the benefit of its people (Munga *et al*., 2012:28).
Skills	A skill is the ability to do something well and stems from one's knowledge, practice and aptitude (Beaubien & Baker, 2004:i52).
Supervision	Supervision involves the work or activity related to being in charge of someone to ensure that things or activities are executed correctly (Oxford South Africa school dictionary, 2015:596).
Treatment guidelines	Treatment guidelines are a set of statements developed to assist with decision-making in the treatment of certain diseases that patients have (Winfields & Richards, 2004:409).

CHAPTER 1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

This chapter introduces the research study and consists of the background, the problem statement, research questions and objectives of the study.

The successful implementation of treatment guidelines contributes to a potentially optimal impact on Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) management. Therefore, the study evaluates processes and drivers of, and barriers to, the implementation of HIV/AIDS treatment guidelines in Lesotho and develops a framework for it.

1.2 Background information

Lesotho is a developing country that has been hard-hit by the HIV/AIDS pandemic. It is a Southern African country, landlocked by the Republic of South Africa, with a population of approximately 1.9 million (Bureau of Statistics Lesotho, 2013:19). According to the Lesotho Population-based HIV Impact Assessment (LePHIA) (MOH, 2017), the prevalence of HIV among adults aged 15 to 59 years, who live in Lesotho, is 25.6% – of which 30.4% are female and 20.8% are male. This translates to approximately 306,000 people, aged 15 to 59 years, who live with HIV (PLHIV). HIV prevalence peaks at 49.9% in females aged 35 to 39 and at 46.9% in males aged 40 to 44 years. The prevalence of HIV among children aged 0 to 14 years, who live in Lesotho, is 2.1% – of which 2.6% are female and 1.5% are male. This translates to approximately 13,000 children, age 0 to 14 years, who live with HIV (CLHIV). The prevalence of viral load suppression (VLS) among HIV-positive adults aged 15 to 59 years (in Lesotho) is 67.6% – of which 70.5% are female and 63.4% are male (MOH, 2017).

Treatment guidelines become an important tool to guide the selection of antiretroviral (ARV) drug regimens used for the successful treatment of HIV/AIDS. Benefits of treatment guidelines include improving rational prescribing, cost-effective prescribing and assisting in the continuous care of the patient. It also has educational value for the prescribers and other users (Winfields & Richards, 2004:410).

The World Health Organization (WHO) published the first HIV/AIDS treatment guidelines on the use of ARV drugs for the prevention of mother-to-child transmission (PMTCT) in 2001 (WHO, 2001). The WHO then published treatment guidelines on the use of antiretroviral therapy (ART)

for HIV infection among adults and adolescents in 2003 (WHO, 2003) and 2004 (WHO, 2004). The 2006 updates of the adolescent and adult treatment guidelines presented a public health approach that had simplified and harmonised ARV regimens (Gilks *et al.*, 2006:505). The publications and their updates throughout the years have provided countries with important guidance on how to scale up their national ARV programmes (WHO, 2013:25).

The treatment of HIV/AIDS in developed countries is patient-based and is managed by specialists with access to highly technologic laboratory monitoring tests (Gilks *et al*., 2006:505). Most countries in Europe have no national recommendation for the treatment of HIV/AIDS, and physicians rely on their own experience and other sources of information (Clumeck *et al*., 2008:65; EACS, 2008:65). Cost-effectiveness does not form part of the recommendation of the European AIDS Clinical Society (EACS) guidelines, which are intended for the clinical care and treatment of HIV-infected adults (EACS, 2008:66). Clinical practices in ARV therapy are determined by national policies, local availability, drug registration, reimbursement and access to treatment (EACS, 2008:65). In addition, apart from the treatment of HIV – the treatment of comorbidities such as cardiovascular, central nervous system, respiratory, hepatic and metabolic, and other disorders (EACS, 2016:32). However, in countries that are resource-limited like Lesotho, a public health approach (WHO, 2013:14) is used in order to have simplified HIV/AIDS treatment guidelines, which are central in the management of HIV/AIDS (Gilks *et al*., 2006:505). The public health approach for HIV/AIDS involves (WHO, 2013:14):

- Simplified, restricted formularies.
- Large-scale use of fixed-dose combinations of ARV for the first-line treatment of adults and children.
- Simplified clinical and toxicity monitoring.
- Free services at the point of service delivery.
- Decentralisation.
- Integration of services, including task shifting.

Periodic reviews of treatment guidelines are necessary in order to incorporate new clinical evidence new drugs and drug formulations, and best practice (WHO, 2014:17). New ideas contributed to scaling up ARV therapy to include more population groups, such as paediatric

patients, teenagers, elderly, pregnant and lactating mothers, and key populations (such as sex workers, gays, lesbians, transsexuals) (WHO, 2014:5). One of the significant changes made to the 2010 Lesotho HIV/AIDS treatment guidelines was the decision to discontinue the use of stavudine as a first-line drug for both adults and children due to its adverse drug reactions (MOH, 2010:ix).

The first HIV/AIDS treatment guideline in Lesotho was developed in 2004, followed by a revision in 2007 and again in 2010 (MOH, 2010: ix). The differences between the treatment guidelines was new evidence based information recommended by WHO. The Lesotho national guidelines on the use of ARV drugs for the prevention and treatment of HIV/AIDS were implemented in 2014 (MOH, 2014:1). However, Harrison *et al*. (2013:49) indicated the need to use local information from local research for the reviews, adoptions and implementation of treatment guidelines.

In order for HIV/AIDS treatment guidelines to add value to HIV/AIDS care and treatment, they have to be properly implemented. Implementation is defined as a specific set of activities that are intended to put an activity or programme of known dimensions into practice (Fixsen *et al*., 2005:6). Implementation is described as the collection of processes aimed at getting an intervention into use in an organisation (Rabin *et al*., 2008:117).

Implementation research is defined as "*the scientific study of the systematic uptake of clinical research findings and other evidence-based practices into routine practice, resulting in improved quality (effectiveness, reliability, safety, appropriateness, equity, and efficiency) of healthcare*" (Eccles & Mittman 2006:1; Eccles *et al*., 2009:18). Peters *et al.* (2013:347) describe implementation research as the scientific inquiry into questions regarding implementation, or the act of carrying an intention into effect. These are interventions which in health research are referred to as policies, programmes or individual practices (Peters *et al.,* 2013:347). Potential solutions may be introduced into a health system on how to promote their large-scale use and sustainability (Peters *et al.,* 2013:347). The intent is to understand 'what', 'why', and 'how' interventions work in real-world settings and to test approaches to improve these. Implementation research considers any aspect of implementation, which includes factors affecting implementation, the processes and the results of implementation (Peters *et al.,* 2013:347). Therefore, implementation research can contribute to the successful implementation of HIV/AIDS treatment guidelines, because these guidelines are the backbone of treatment outcomes in resource-limited countries (Williams *et al.,* 2014:6).

Damschroder *et al.* (2009:10) specify four essential activities of the implementation process that are common across organisational change models: planning, engaging, executing, and reflecting and evaluating. Applying this to the current study healthcare professionals at the central level (HIV/AIDS programme) outlined planning activities for the implementation of treatment guidelines. Issues regarding workload, training and need of additional healthcare professionals have to be addressed in order to effectively implement guidelines (Registered Nurses' Association of Ontario (RNAO), 2012:52).

The study of Damschroder *et al.* (2009:11) indicates that engaging requires attracting and involving suitable individuals in the implementation and use of the intervention through a joint strategy of social marketing, education, role modelling, training and similar activities Damschroder *et al.* (2009:11) also state that the quality of the execution includes the degree of fidelity, intensity and timeliness of task completion, and the degree of engaging the implementation leaders. Time should be dedicated to reflection before, during and after implementation. Once the process of implementation has started and has been completed, there is a need to reflect and evaluate the process to ensure that the implementation of treatment guidelines has, indeed, proceeded according to plan. There must be quantitative and qualitative feedback about the progress and quality of implementation accompanied by regular personal and team debriefing sessions on progress and experience (Damschroder *et al.,* 2009:11).

In order to have successful implementation which leads to improved treatment outcomes, the barriers in any implementation process need to be identified and addressed (Damschroder *et al.,* 2009:7; RNAO, 2012:56; Taba *et al*., 2012:5). Taba *et al.* (2012:4) list some of the barriers of guideline implementation as resource barriers, system barriers, attitudinal barriers and patient barriers. The RNAO (2012:56) also lists evidence-related barriers, target audience-related barriers or facilitators, and organisational-related barriers or facilitators. The RNAO (2012:62) suggests the need for the identification of barriers and solutions to be pre-planned during the planning stage of the implementation of treatment guidelines.

In addition to implementation processes and barriers, there are implementation drivers which are divided into three categories, namely competency (Farnham & Stevens, 2000:374), organisational (RNAO, 2012:59) and leadership drivers (Damschroder *et al.,* 2009:10).

Competency drivers are mechanisms to develop, improve and sustain one's ability to implement an intervention, as intended, in order to benefit beneficiaries (Damschroder *et al.,* 2009:10; Farnham & Stevens, 2000:374). Competency drivers include selection, training, coaching and

performance assessment (Bertram *et al*., 2014). The competencies of personnel could be one of the factors that affect the implementation of treatment guidelines in Lesotho. Healthcare professionals are expected to implement changes in the HIV/AIDS treatment guidelines and, therefore, they must have received adequate and appropriate training. Their performance with regard to the implementation of HIV/AIDS treatment guidelines must be assessed accordingly.

Organisational drivers are mechanisms used to create and sustain hospitable organisational and system environments in order to deliver effective services (RNAO, 2012:58-59). Administrative support provides leadership (Damschroder *et al.,* 2009:9; RNAO 2012:59; Fixsen, 2015:19). Systems intervention ensures that there are enough financial and human resources to make implementation possible (Damschroder *et al.,* 2009:9; Fixsen, 2015:21). Decision-support data systems are sources of information used to help healthcare professionals make informed decisions internal to an organisation (Damschroder *et al.,* 2009:10; RNAO, 2012:58).

Leadership drivers focus on providing the right leadership strategies for the types of leadership challenges that occur when implementing new programmes and guidelines (Damschroder *et al.,* 2009:9; RNAO, 2012:56). Leadership drivers are divided into technical and adaptive leadership. An adaptive leadership style is needed at the beginning of a change taking place, and technical leadership is needed to manage the continuing implementation of an effective programme over a long time period (Damschroder *et al.,* 2009:9; Fixsen, 2015:23; RNAO, 2012:56). Leadership drivers play an important role in the implementation of HIV/AIDS treatment guidelines, and the presence of committed leadership may affect the impact that is expected (Ancker & Rechel, 2015:17).

1.3 Problem statement

The immediate challenge of starting HIV/AIDS care and treatment programmes has largely been met worldwide (Hirschhorn *et al.,* 2007:516). Hirschhorn *et al*. (2007:516) also state that the global community and national governments are faced with the challenge of how to scale up care and treatment, how to ensure quality service and how to sustain large public treatment programmes over time with the high prevalence of HIV/AIDS and limited resources.

The rapid scale-up of HIV/AIDS treatment observed during the past decade has, at times, left gaps in the quality of service delivery (WHO, 2013:209). These gaps can affect the quality of services delivered and include the following: low adherence rates and belated enrolment in care or retention of ART. Labhardt *et al*. (2013) state that Lesotho was among the first countries to

adopt the decentralisation of care – from hospitals to nurse-led PHC facilities – to scale up the provision of ART. This was facilitated by the development of national HIV/AIDS treatment guidelines tailored to assist nurses who work in PHC settings (Bygrave *et al*., 2011:170). However, decision-making regarding the implementation of HIV/AIDS treatment guidelines is facilitated at the policy level by managers in charge of the HIV/AIDS programme who are mandated to guide and oversee the implementation of treatment guidelines (Beaglehole *et al.,* 2008:945). The WHO (2013:44) recommends that national HIV/AIDS programmes should consider undertaking implementation research to determine how best to adopt and adapt HIV/AIDS treatment guidelines to their local context.

Implementation research may identify local gaps so that they may be timeously addressed. Therefore, this research project will add new knowledge regarding the process of implementation of 2016 HIV/AIDS treatment guidelines. A gap in information exists as it is not known how Lesotho implements the adapted WHO HIV/AIDS treatment guidelines. It is not known whether local needs are being addressed by adopting the WHO HIV/AIDS treatment guidelines the way they are. It is also not known how the previous HIV/AIDS treatment guidelines impacted the care and treatment of HIV/AIDS patients – in terms of the prevention of new HIV infections and the increase in the number of patients on ARV treatment – and if this is in line with WHO recommendations for implementation of the HIV/AIDS treatment guideline (WHO, 2013:45). The following question arises from the brief discussion above:

How can the implementation of HIV/AIDS treatment guidelines be improved?

1.4 General aim

The general aim of this study was to evaluate the factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho and to develop a framework to facilitate the implementation thereof.

1.5 Specific research objectives

The empirical investigation objectives include the following:

- To explore current HIV/AIDS treatment guideline implementation processes in Lesotho.
- To investigate how implementation drivers affected the implementation of current HIV/AIDS treatment guidelines in Lesotho.

- To identify barriers to the implementation of HIV/AIDS treatment guideline in Lesotho.
- To develop a framework for the implementation of HIV/AIDS treatment guideline in resource-limited countries such as Lesotho to facilitate effective implementation.

The empirical investigation includes the following levels:

- Policy level (HIV/AIDS programme).
- The District Health Management Teams (DHMT).
- Primary healthcare (PHC) levels, which include the ARV treatment facilities and the outpatient departments (OPDs) of hospitals.

1.6 Research methodology

Research methods refer to the techniques the researcher uses to organise and structure a study in a systematic manner (Aparasu, 2011:6). The research methodology has two sections: a literature review and an empirical investigation. The literature review comprises the use of search engines and keywords to find applicable literature which will be presented in Chapter 2 of the study. The empirical investigation consists of the research design, study setting, target and study population, development and administration of the data-collection tool and data analysis in Chapter 3 of the study.

1.6.1 Empirical investigation

The empirical investigation was implemented on three organisational levels: the HIV/AIDS programme (at central government), the DHMT and the PHC facilities. Figure 1-1 illustrates the different organisational levels for the implementation of the research project. These levels are related because PHC facilities implement decisions made at HIV/AIDS programme with support and supervision from the DHMT.

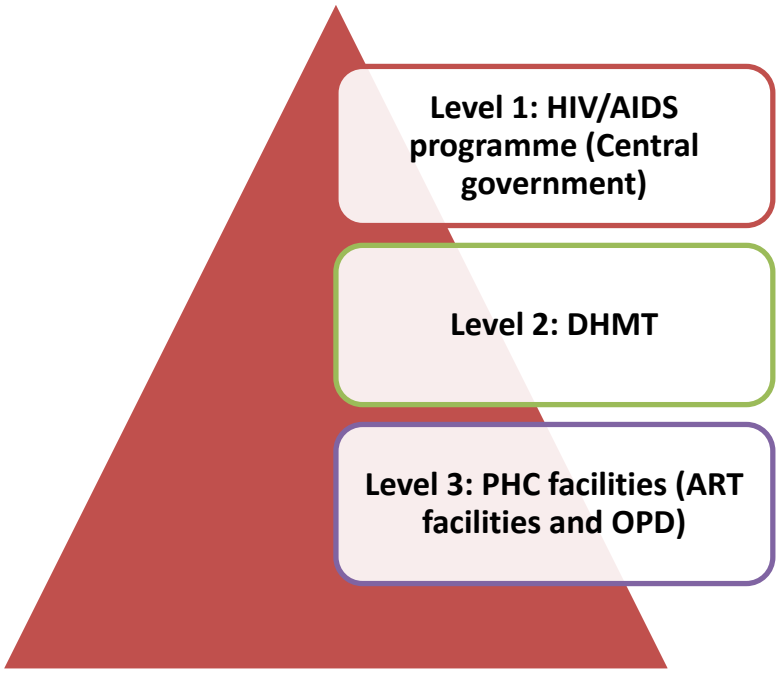

Figure 1-1: Organisational levels of the project implementation frame

1.6.2 Study design

An observational, cross-sectional study design was used. An observational study is a study whereby a researcher – with the aim of observing and collecting data on characteristics of interest – does not attempt to influence healthcare professionals or their surroundings (Petrie & Sabin, 2009:36; Song & Chung, 2010). A cross-sectional study is a prevalence study that examines the relationship between variables in a defined population at a specified time or makes comparisons at a single point in time, or the researcher observes subjects at a single occasion (Petrie & Sabin, 2009:37; Song & Chung 2010). Therefore, the nature of this research provides a snapshot of the current situation (Petrie & Sabin, 2009:37; Stommel & Wills, 2004:126) regarding the processes for implementation of HIV/AIDS treatment guidelines by the HIV/AIDS programme, the DHMT and the PHC facilities in Lesotho.

1.6.3 Study setting

The study setting refers to the location where the study took place. The study was conducted according to the different levels in various study sites in the Lesotho public healthcare system: Level 1 being the HIV/AIDS programme at the central government level, Level 2 at the DHMT level and Level 3 at the PHC facilities level. Table 1-1 specifies the study settings, Table 1-2

indicates the number of study sites and the population at the different organisational levels for the empirical study (Bureau of Statistics Lesotho, 2013:24), and Table 1-3 indicates the number of study sites per level.

Table 1-1: Study settings according to organisational level

Organisational level	Study setting
Level 1: HIV/AIDS programme (at the central government level)	The HIV/AIDS programme (at the central government level) falls under the Directorate of Disease Control of the MOH in Lesotho (Howard *et al*., 2016). Its specific function is to address all HIV/AIDS-related policy issues, including the management of treatment guidelines. The HIV/AIDS programme office is located in the MOH headquarters and is the study setting for Level 1. The HIV/AIDS programme team consists of various healthcare professionals working together to guide the DHMT and PHC facilities with the implementation of HIV/AIDS treatment guidelines. The HIV/AIDS programme (at the central government) is also mandated with leadership in the HIV/AIDS treatment guidelines implementation.
Level 2: DHMT	There is a DHMT in each district that manages health issues, including HIV/AIDS services, at that district level There are ten districts in Lesotho. The DHMT is mandated with the supervision of PHC services in the different districts. Therefore, the implementation of HIV/AIDS treatment guidelines at the PHC level is part of its mandate.
Level 3: PHC facilities	In Lesotho, some PHC facilities and hospitals are managed by the MOH; others are managed by the Christian Health Association of Lesotho (CHAL). The churches involved are Roman Catholic, Anglican and others (Takondwa *et al*., 2010:12). Table 1-2 also presents the number of hospitals and PHC facilities at the PHC level. There are PHC facilities that provide services, including HIV/AIDS services, at the village level in all of the districts. OPDs at hospitals also provide PHC services. The OPDs have an ART clinic that provides HIV/AIDS care and treatment. PHC facilities fall under both the hospital and the DHMT – the former provides clinical supervision while the latter provides administrative supervision.

Table 1-2: Number of districts, population numbers, and number of hospitals and PHC facilities

		Number of PHC facilities	
District	**Population**	**Number of hospitals with OPD departments**	**Number of PHC / ART clinics**
Maseru	389 627	4	27
Leribe	331 117	2	29
Mafeteng	183 507	1	11
Mohale's Hoek	181 196	1	12
Berea	273 832	2	12
Butha-Buthe	105 403	2	6
Quthing	129 533	1	10
Thaba-Tseka	130 532	2	11
Qacha's Nek	63 910	2	10
Mokhotlong	105 538	1	10
Total	1 894 195	18	138

Source: (Bureau of Statistics Lesotho, 2013:24)

Table 1-3: Number of study sites for different organisational levels

Organisational level	Number of sites	Location
HIV/AIDS programme	1	MOH
DHMT	10	Districts (Lesotho is divided into 10 districts)
PHC facilities*	156	ART clinics and OPDs

*PHC facilities include ART clinics and OPDs

1.6.4 Target population

The target population is the ideal generalised population relevant to the study (Stommel & Wills, 2004:299). The target population of the study consisted of healthcare professionals who are employees in the MOH and the CHAL – all registered with their respective regulatory bodies.

These include:

- Medical practitioners.
- Registered nurses.

- Pharmacists.

The type and number of healthcare professionals included in this study depended on the specific level of the study site.

1.6.5 Study population

The study population was a fixed accessible population from which the actual sample was drawn (Stommel & Wills, 2004:299). The study population include healthcare professionals who work at the following facilities or units:

- Government of Lesotho owned units which include HIV/AIDS programme at the MOH, the DHMT and the PHC facilities (ART facilities and OPDs).
- CHAL-owned facilities which also include PHC facilities (ART clinics and OPDs).

The selection of the study population for the different levels is discussed under each specific level.

1.6.5.1 Study population Level 1: HIV/AIDS programme

Table 1-4 indicates the study population at Level 1: HIV/AIDS programme (located at the MOH office). All healthcare professionals who comply with the inclusion criteria and who were willing to participate were included. Therefore, there was all-inclusive sampling.

Inclusion criteria

The following healthcare professionals were included in the study:

- Those currently employed in the HIV/AIDS programme.
- Those who are registered with their health profession's regulatory bodies.

Exclusion criteria

The following individuals were not included in the study:

- All non-healthcare personnel, such as financial and administrative personnel, in the HIV/AIDS programme.
- All healthcare personnel who were members of the HIV/AIDS programme but who were not available or who could not be followed up with during the data-gathering period.

Table 1-4 indicates the study population of Level 1, the HIV/AIDS programme.

Table 1-4: Study population of Level 1: HIV/AIDS programme

Type of facility	Healthcare professionals	Number of healthcare professionals	Sample size	Interviewed
Level 1 – HIV/AIDS programme				
HIV/AIDS programme	Nurses	4	4	4
	Medical practitioners	1	1	1
Total	All	5	5	5

1.6.5.2 Study population Level 2: DHMT

The study population consisted of all healthcare professionals who are registered with regulatory bodies, who work directly at the DHMT and who were willing to participate, as described in Table 1-5. There are nurses and pharmacists at each of the DHMTs who supervise the PHC facilities. As there are 10 DHMTs, there were at least 10 nurses (if there were more than one nurse at the DHMT, all supervising nurses were interviewed), 10 district health managers and 10 pharmacists.

All possible healthcare professionals, as indicated in Table 1-5, who comply with the inclusion criteria were selected. There was all-inclusive sampling: all who met the criteria and gave consent were included.

Inclusion criteria

The following healthcare professionals were included:

- District health managers, nurses and pharmacists who are personnel of the DHMT and who supervise either MOH or CHAL PHC facilities which oversee HIV/AIDS care, treatment and support.

Exclusion criteria

The following personnel were not included in the study:

- Any district health manager, nurse or pharmacist who was a member of the DHMT, but was absent during the data-collection period and who could not be followed up with, were excluded.

Table 1-5: Study population at Level 2: DHMT

Type of facility	Healthcare professionals	Number of healthcare professionals	Number of healthcare professionals interviewed
DHMT	Nurses	10	10
	Pharmacists	10	10
	District health managers	10	7
Total	All	30	27

1.6.5.3 Study population Level 3: PHC facilities

The study population includes all PHC managers and healthcare professionals who were registered with their respective regulatory bodies and who were employed at the PHC facilities (ART facilities and OPDs). The healthcare professional was a medical practitioner, a nurse or a pharmacist. PHC managers attend quarterly meetings at the DHMT. Table 1-6 indicates the sample size of the healthcare professionals at the PHC facilities and Table 1-7 indicates the inclusion and exclusion criteria.

Table 1-6: Sample size of healthcare professionals at the PHC facilities

Type of facility	Healthcare professionals	Minimum number of health professionals
ART clinics (MOH & CHAL)	Nurse (PHC manager)	138
	Nurses	138
	Pharmacists	18
OPD	Nurses	18
	Pharmacists	18
Total	All	330

Table 1-7: Inclusion and exclusion criteria

ART facilities	OPD
Inclusion criteria	
The PHC facility manager who is in charge of the ART clinic.	The OPD manager who is in charge of the ART clinic.
All healthcare professionals in PHC facilities (registered nurses and pharmacists) who provide HIV/AIDS treatment and care.	All medical practitioners, nurses and pharmacists who provide HIV/AIDS treatment and care.
Exclusion criteria	
Any PHC professional or manager who was absent on the day of recruitment (not attending the quarterly meeting.)	All medical practitioners, nurses and pharmacists who were absent at the time of data collection and who could not be followed up with.
Medical practitioners, nurses and pharmacists who were absent at the time of data collection and who could not be followed up with.	

1.6.6 Development of data collection tools

Data collection tools refer to the instruments used to collect data (Kobus *et al*., 2016:37). Structured questionnaires with both open- and closed-ended questions were used as data collection tools in this study.

There were three questionnaires, each developed for a specific level. Questionnaires were either self-administered (Level 3) or completed by the researchers during face-to-face interviews (Level 1 and 2).

1.6.6.1 Content of the questionnaires

Structured questionnaires were designed to collect data (Annexure A, B and C). Questions were developed based on relevant frameworks, namely implementation processes (Damschroder *et al.,* 2009:10), implementation barriers and facilitators (RNAO, 2012:59) and implementation drivers (Fixsen, 2015:23), all with reference to HIV/AIDS treatment guidelines (MOH, 2014; WHO, 2013; WHO, 2014).

The following references were used to decide which information to use when developing data-collection tools. Table 1-8 shows the references and literature sources considered during the development of the structured questionnaires.

Table 1-8: Types of information used to develop the tools and literature sources

Types of information	References
Different editions of the WHO's HIV/AIDS treatment guideline.	Gilks *et al*. (2006:505); Hirnschall *et al*. (2013:1); WHO (2013:45); WHO (2014:17); WHO (2015)
Policies and HIV/AIDS treatment guidelines of Lesotho.	MOH (2014); MOHSW (2010); LDHS (2014); Bureau of Statistics Lesotho (2013)
Implementation process covering planning, engaging, executing, reflecting and evaluating.	Glasgow *et al*. (2013:s29); Damschroder *et al*. (2009:10)
Implementation barriers and facilitators	Gagliardi *et al*. (2011:26); Nilsen (2015); RNAO (2012:59); Tansella & Thornicroft (2009:284)
Implementation drivers including competency, organisational and leadership.	Fixsen (2015:23); Glasgow *et al*. (2013:s30)

The following aspects were also considered when selecting the above implementation processes, barriers and facilitators, and drivers, which were well-researched and analysed by Fixsen (2015:23), RNAO (2012:56) and Damschroder *et al.* (2009:10) – these could be applied in the implementation of HIV/AIDS treatment guidelines in Lesotho as a resource-limited country:

- HIV/AIDS treatment guidelines must be developed using evidence-based practice (WHO, 2013:30) which is the case with the development of WHO's HIV/AIDS treatment guidelines (Glasgow *et al*., 2013:s26; RNAO, 2012:56; WHO, 2013:45).

- The WHO recommends that HIV/AIDS treatment guidelines should be adapted to fit the local settings (Glasgow *et al*., 2013:s26; WHO, 2013:45).

- The implementation of HIV/AIDS treatment guidelines must be in line with implementation processes and drivers (Damschroder *et al.,* 2009:10; Fixsen, 2015:23).

- The implementation barriers and facilitators should be taken into consideration as they can either limit or enhance the impact of implementation (RNAO, 2012:56), and this can be applied to HIV/AIDS treatment guidelines (MOH, 2014; WHO, 2013; WHO 2014).

- This type of topic has never been investigated before in the Lesotho PHC setting, therefore, this will add new knowledge.

Initial drafts of the structured questionnaires for the different levels were developed. A set of questions aimed at the above-mentioned healthcare professionals was developed and shared

with pharmacists and nurses at the School of Pharmacy and the School of Nursing (in the Faculty of Health Sciences) at the North-West University (NWU) and at the National University of Lesotho, respectively, in order to assess content validity of the questionnaire (RNAO, 2012:82). The different questionnaires were corrected accordingly, and the final drafts were adopted. The different questionnaires consist of the following sections:

- Demographic and employment information.
- Healthcare professionals and leadership (manager) in the HIV/AIDS programme.
- HIV/AIDS treatment guidelines.
- Implementation processes for the HIV/AIDS treatment guidelines.
- Performance evaluation.
- Health information and reporting.
- Leadership and management.
- Implementation barriers and facilitators.

Table 1-9 presents the first three objectives with the different elements or topics and the different implementation levels of the study (Level 1 – HIV/AIDS programme, Level 2 – DHMT, and Level 3 – PHC facilities (ART clinic and OPD)).

Table 1-9: Research objectives, elements of questionnaires and levels

Objective	Element	Levels
To explore current HIV/AIDS treatment guidelines implementation processes in Lesotho.	Treatment guidelines	Level 1, 2 and 3
	Process – planning	Level 1 and 2
	Process – executing	Level 3
	Process – engaging and training	Level 1, 2 and 3
	Process – evaluating and reflecting	Level 1 and 2
To investigate how the implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.	Competencies	Level 1, 2 and 3
	Organisation	Level 1, 2 and 3
	Leadership	Level 1 and 2
To identify barriers to HIV/AIDS treatment guideline implementation in Lesotho	Barriers (Please note that barriers cut across processes and drivers)	Level 1, 2 and 3

It is important to mention that the fourth objective will be addressed in Chapter 4 where an implementation framework will be developed with the aim of assisting the MOH to implement future HIV/AIDS treatment guidelines.

1.6.6.2 Types of questions asked

The structured questionnaires consist of both open- and closed-ended questions in order to gather comprehensive data at different levels. This allowed healthcare professionals to give their opinion about some of the issues related to the implementation of HIV/AIDS treatment guidelines.

1.6.6.2.1 Open-ended questions

In open-ended questions, healthcare professionals compose their own answers, and it provides more information based on the understanding of the healthcare professional. However, it may take some time to answer the questions (Neuman, 2014:345; Reja *et al.,* 2003:160; Stommel & Wills, 2004:251).

1.6.6.2.2 Closed-ended questions

With closed-ended questions, healthcare professionals are provided with possible answers and asked to select the most appropriate answer (Neuman, 2014:345; Reja *et al.,* 2003:160; Stommel & Wills, 2004:251). A closed-ended question may trigger a healthcare professional to think of an

option that was not previously thought of by the researcher. Therefore, closed-ended questions had to be used to allow for other options. Table 1-10 indicates the advantages and disadvantages of open-ended and closed-ended questions (Reja *et al.,* 2003:160).

Table 1-10: Advantages and disadvantages of closed-ended and open-ended questions

Type of question	Advantages	Disadvantages
Open-ended	It allows the healthcare professionals to describe the answer.	Time consuming.
	It allows the healthcare professionals to give detailed answers.	Some details may be irrelevant.
	The key reason for the problem may be revealed.	Analysis may be complex and lengthy.
	Wording has to be more explicit.	Difficulty to code the responses.
	Provides diverse answers.	Yields less responses.
	Provides missing data.	Answers may be invalid.
Closed-ended	Directs the healthcare professional to given pre-determined answers only.	May leave out other important details.
	Short time required.	Information given may have missed important details.
	Easy to analyse.	More inadequate answers.

The open-ended questions used did not lead the healthcare professionals to certain responses; where information needed to be confirmed closed-ended questions were used. The questions were not so long as to confuse the healthcare professional. Jargon related to medical terminology was avoided (Stommel & Wills, 2004:246). The language used was clear, readable and concise to avoid healthcare professionals misunderstanding the questions.

1.6.6.3 Validity of the questionnaires

A measurement is considered valid if it measures the characteristic that it is intended to measure, and validity confirm that the concepts or constructs are truly reflected by the assigned values (RNAO, 2012:82; Aparasu, 2011:60). The validity of a data-collection tool (for example a question or a questionnaire) is the extent to which it actually measures what it is designed to measure (Aparasu, 2011:61).

The content validity of the different questionnaires was evaluated by eight academic staff members – four pharmacists and four nurses from the School of Pharmacy and School of Nursing (in the Faculty of Health Sciences) at the NWU and at the National University of Lesotho, respectively – and two medical practitioners from private practice. The responses were assessed for content validity in order to find out if the questions provided the expected answers. This also assisted in clarifying some questions, correcting others and recording the time it took to complete one questionnaire.

Face validity was evaluated by a statistician from the NWU. Throughout this process, the questionnaires were repeatedly evaluated with the possibility of altering or adapting them. The sequence of questions was checked, and if one question clarified the information given in another, then it was listed after the question that it clarifies. Certain topics were covered in the beginning, and if more than one question was needed for a certain objective, the questions were grouped together in the questionnaire. Questions that did not provide consistent answers were revisited in order to clarify them.

1.6.6.4 Reliability

The reliability of a research instrument relates to the extent to which the findings are repeatable, reproducible or internally consistent. Reliability, therefore, means that the information provided by the instrument (such as a questionnaire) does not vary because of the data-collection tool characteristics (Neuman, 2014:212). The greater the degree of consistency and stability in an instrument, the greater its reliability (Kumar, 2011:215).

Some of the factors that can influence the reliability of a self-administered questionnaire, as well as a structured questionnaire completed during face-to-face interviews, are the following (Kumar, 2011:216):

- The ambiguity of question wording.
- The inconsistent interpretation of questions.
- Variation in the administration of the questionnaire by different interviewers.
- The inability or unwillingness of healthcare professionals to provide accurate information.

- Changes in the healthcare professional's mood when responding to questions or writing answers in a questionnaire can alter and may affect the reliability of that instrument.

- The interviewer's mood can influence their motivation and interaction, which in turn could influence the healthcare professionals' response, thereby affecting the reliability of the research instrument.

The following methods were used to increase the reliability of questions in the questionnaires:

- Special attention was paid to ensuring that each measure or question indicates only one concept.

- Attention was also paid to measuring constructs at the most precise level possible.

- Different preliminary versions of the questionnaires were drawn up and evaluated by various persons (refer to Section 1.6.7.3) before the questionnaires were finalised.

The answers were assessed to ensure that each question was answered in the same manner throughout the questionnaire. If any deviation was found in the answer given by the same group of professionals, then the question was revisited and revised so that when it was answered, it would always yield the answer in the same manner.

1.6.7 Administration of questionnaires

The method of administering each type of question was clearly considered to ensure that each level has a suitable method of questionnaire administration. Table 1-11 shows the type of questionnaire and method of administration for each level.

Table 1-11: Type of data-collection tool and administration method according to level

Level	Type of data-collection tool	Administration
1 – HIV/AIDS programme	Structured questionnaire (Annexure A)	Completed during face-to-face interviews at an allocated office of the HIV/AIDS programme at the MOH.
2 – DHMT	Structured questionnaire (Annexure B)	Completed during face-to-face interviews with healthcare professionals of the DHMT.
3 – PHC facilities	Structured questionnaire (Annexure C)	PHC professionals in ART clinics and OPDs self-administered the questionnaires.

The mediator (a lecturer at the National University of Lesotho (NUL)) was trained by the researcher using the proposal, goodwill permission forms, informed consent forms and different questionnaires. The mediator received detailed information about the background, the problem statement, and the aims and objectives of the study. The methodology followed at each level was discussed in detail. The role and responsibilities of the mediator in the recruitment processes were explained. Detailed information regarding the process of obtaining informed consent and the contents of the informed consent form and questionnaires were provided to the mediator. Having knowledge about the study enabled the mediator to respond to questions regarding the study that the healthcare professionals might have had.

During the implementation of the study at Level 3, the above-mentioned mediator explained the recruitment process to the PHC managers. The PHC managers acted as mediators to recruit healthcare professionals in their individual PHC facilities (refer to Table 1-14).

1.6.7.1 Recruitment of healthcare professionals and administration of questionnaires

The necessary ethics approval and goodwill permissions were obtained before recruitment of the healthcare professionals and implementation of the study at the different levels. Written informed consent was also obtained from healthcare professionals before the rollout of the study at the different levels (refer to Annexures D - G).

Table 1-12 to Table 1-14 present the recruitment and administration of questionnaires and obtained consent at the different levels.

Table 1-12: Recruitment, obtainment of consent and administration of questionnaires at Level 1: HIV/AIDS programme

Organisation level	Recruitment process	Administration of questionnaires
Level 1: HIV/AIDS programme	The researcher requested a formal meeting with the manager of the HIV/AIDS programme in order to introduce the study and to obtain goodwill permission from the manager in order to implement the study in the HIV/AIDS programme. After goodwill permission was obtained, the manager was asked to allow that the study be introduced to healthcare professionals of the HIV/AIDS programme at one of the programme's regular meetings. A list of healthcare professionals of the HIV/AIDS programme (who complied with the inclusion criteria) and their telephone numbers was requested from the manager. At the meeting, a lecturer from NUL acted as the mediator to introduce the project to the potential healthcare professionals and to encourage the participation of healthcare professionals of the HIV/AIDS programme. The mediator emphasised that participation is voluntary and that anyone can withdraw. The process that should be followed to obtain informed consent was explained to the attendees. **Obtaining informed consent** During the meeting with members of the HIV/AIDS programme, two copies of the informed consent form (refer to Annexure D) were distributed by the mediator to each member who complied with the inclusion criteria. They were asked to read and sign the informed consent form if they want to participate; a witness also had to sign. Willing healthcare professionals were requested to keep one copy of the signed informed consent form and to place the other copy in a sealed box in the office of the secretary of the HIV/AIDS	After recruitment, the researcher telephonically scheduled appointments with healthcare professionals for the completion of the structured questionnaire (Annexure A). A private office was requested from the manager of the HIV/AIDS programme to be used for all the face-to-face interviews which were conducted there at the agreed time. A maximum of three interviews were scheduled per day. Healthcare professionals were informed that they were free not to participate or could withdraw at any time during the interview. healthcare professionals could verbally inform the researcher of their withdrawal from the study before, during or just after the interview – before the researcher had left. After the interview, the completed questionnaire was stored together with the other questionnaires where it became impossible to identify individual questionnaires. The researcher asked questions and wrote down the responses given by the healthcare professionals during the face-to-face interview and then ensure that the answers were all written down in the structured questionnaire. Each interview did not take longer than 60 minutes to complete.

Organisation level	Recruitment process	Administration of questionnaires
	programme manager. They had time until the next day to make a decision to participate. Healthcare professionals who complied with the inclusion criteria – but who needed more time to consider participation in the study – were asked to submit the signed informed consent form in the provided sealed box at their convenience and at the agreed time (which was not more than two days). The mediator signed both copies of the informed consent forms before distributing them to the healthcare professionals. To ensure anonymity, the mediator asked healthcare professionals to place unsigned informed consent forms in a sealed box even if they did not want to participate. **Gathering the signed informed consent forms** The sealed box was collected by the researcher or mediator two days after the meeting was held at the pre-determined date and time. The sealed box was opened by the researcher in her own office in Maseru..	

Table 1-13: Recruitment, obtainment of consent and administration of questionnaires on Level 2: DHMT

Organisational level	Recruitment process	Administration of questionnaires
Level 2: DHMT	The researcher requested a formal introduction meeting with each of the 10 DHMT managers. Goodwill permission to implement the study in the specific district was requested from each DHMT manager. After goodwill permission was obtained: The DHMT manager allowed the study to be introduced to members of the DHMT at a pre-arranged regular monthly meeting. A list of names and telephone numbers of potential healthcare professionals who complied with the inclusion criteria was obtained from each DHMT manager for the preparation of the interviews' dates and times. A private office to be used for all the face-to-face interviews was obtained from the DHMT manager. A lecturer from NUL acted as a mediator to introduce the project and to encourage the participation of the DHMT members; the mediator, however, still emphasised that participation was voluntary. Issues regarding withdrawal from the study were specified. The process that should be followed was explained to the attendees. **Obtaining informed consent** During the meeting, the mediator distributed two informed consent forms to the healthcare professionals of each DHMT. They were asked to read and sign the forms, together with a witness, if they wanted to participate (refer to Annexure I). The mediator signed both informed consent forms before distributing them to the healthcare professionals.	After recruitment, the researcher telephonically scheduled appointments for the completion of the questionnaires (Annexures B) with healthcare professionals who complied with the inclusion criteria and who signed and submitted the informed consent form. A maximum of three interviews was scheduled per day. All face-to-face interviews were conducted in the privacy of the office at the agreed time. Healthcare professionals were informed that they were free not to participate or could withdraw at any time during the interview until the end of the interview. Healthcare professionals could verbally inform the researcher about their withdrawal from the study before, during or just after the interview – before the researcher had left. After the interview, the completed questionnaire was stored together with the other questionnaires where it became impossible to identify individual questionnaires. The researcher asked questions and wrote down the responses given by the healthcare professional during the face-to-face interview, and then ensure that the answers were all written down in the structured questionnaire. Each interview did not take longer than 60 minutes to complete.

Organisational level	Recruitment process	Administration of questionnaires
	After completion of the informed consent form, healthcare professionals were requested to place one copy of the signed form in a sealed box in the secretary's office of the DHMT. Healthcare professionals were asked to keep the other copy. Healthcare professionals who complied with the inclusion criteria but who needed more time to consider participation in the study were asked to submit the signed informed consent form in the provided sealed box at their convenience at the agreed time (which was not more than a day). To ensure anonymity, the mediator asked the healthcare professionals to also place unsigned informed consent forms in a sealed box even if they did not want to participate. **Gathering the signed informed consent forms** The sealed box was collected by the researcher two days after the meeting had taken place at a pre-determined date and time. The sealed box was opened by the researcher in her office in Maseru.	

Table 1-14: Recruitment, obtainment of consent and administration of questionnaires on Level 3: PHC facilities

Organisation level	Recruitment process	Administration of questionnaire
Level 3: PHC facilities – ART clinics	**PHC managers** The researcher requested a formal meeting with each DHMT manager where the study was introduced (The same meeting as for Level 2). Goodwill permission from each DHMT manager was requested to implement the study in the different PHC facilities in each district. After goodwill permission was obtained, the DHMT manager was asked to allow that the study be introduced to PHC managers at an existing quarterly meeting. PHC managers come from different ART clinics that provide ART coverage throughout the district. Some of the ART clinics are not accessible by road; targeting a quarterly meeting was, therefore, a more manageable option for the researcher. The NUL lecturer was requested to act as a mediator to encourage the participation of PHC managers from the ART clinics in the district. At the arranged quarterly meeting, the mediator introduced the study to PHC managers. The mediator emphasised that participation is voluntary and the process of withdrawal was explained. The process that was followed was explained to the attendees. **Obtaining informed consent** During the quarterly meeting, the mediator distributed two informed consent forms to all potential healthcare professionals and asked	**Distribution of the questionnaires** After signing the informed consent form, the potential healthcare professionals, before their lunch break, place one copy in a sealed box and collected the PHC manager questionnaire from the secretary (Annexure C). They were asked to complete it during the lunch break, in the absence of the DHMT manager and mediator. Healthcare professionals were informed during the meeting that they were free not to participate or could withdraw at any time, but it should be before submission of the self-administered questionnaire. Completed questionnaires were placed in a dedicated sealed box in the secretary's office before the end of the day. **Questionnaires** The two sealed boxes were gathered by the researcher a week after the quarterly meeting had taken place at the pre-determined date and time. The anonymous (without the name of the ART clinic) sealed boxes were opened by the researcher in her office in Maseru. The researcher took the same number of completed questionnaires from the top of the box as the number of signed informed consent forms.

Organisation level	Recruitment process	Administration of questionnaire
	them to read and sign them if they agreed to participate (refer to Annexure K). The researcher signed both informed consent forms before distributing it. The healthcare professionals were given half a day (until their lunch break) to decide whether or not they wanted to participate or not. Two sealed boxes were kept in the secretary's office at the location where the meeting was held – one for the informed consent forms signed by the healthcare professional and witness and the other for the completed questionnaires. After completing the informed consent forms healthcare professionals were requested to place one copy of the informed consent form in a sealed box in the secretary's office and to keep the other copy. To ensure anonymity, the mediator asked the PHC managers to also place unsigned informed consent forms in a sealed box even if they did not want to participate.	
Level 3: PHC facilities – ART clinics	**PHC professionals** The NUL lecturer was also requested to act as a mediator for this process. At the same quarterly meeting (as described for Level 3 for the PHC manager), the mediator requested the PHC managers to act as mediators in order to implement the study in their PHC facility. The PHC manager was responsible to distribute the PHC professional questionnaires and informed consent forms to healthcare professionals working in their ART clinics and to explain	**Distribution of the questionnaires** The PHC manager was also given access to the PHC professional questionnaire (refer to Annexure C). Practitioners were informed that they were free not to participate or could withdraw at any time (until they submit the questionnaire in the sealed box). Completed questionnaires were placed in a separate sealed box in the secretary's office. To maintain anonymity, the PHC professional was asked to place the questionnaire – even if it was not completed – in the sealed box.

Organisation level	Recruitment process	Administration of questionnaire
	the study to the healthcare professionals. The reason is that Lesotho's topography limited the researcher and mediator's ability to travel to the different PHC facilities as most facilities in the mountains were not easily accessible by road. The mediator asked each PHC manager for goodwill permission (Annexure F) to act as a mediator for the administration of questionnaires in their PHC facilities. The mediator also informed them that participation was voluntary. The mediator provided each PHC manager (who signed the goodwill permission form) with enough informed consent forms (Annexure L) and PHC professional questionnaires for the total number of healthcare professionals in their specific PHC facility. The mediator also provided each PHC manager with two sealed boxes – one for the informed consent forms and one for the completed questionnaires. The mediator signed the informed consent forms before distributing them to the PHC managers who acted as mediators in the clinics. **Obtaining informed consent** The PHC managers distributed the two informed consent forms (Annexure L) to the PHC professionals and witnesses and asked them to read and sign the forms if they wanted to participate. After completion, healthcare professionals kept one copy of the signed informed consent form and placed the other copy in a sealed box in the secretary's office of the PHC manager.	**Gathering the signed informed consent forms and completed questionnaires** The PHC manager sent the boxes of informed consent forms and completed questionnaires to the DHMT during the next monthly medicine delivery to the PHC facility. The researcher was informed by the DHMT that the boxes from all the ART clinics were ready for collection. The researcher or mediator then collected all the boxes from the DHMT. The anonymous (without the name of the PHC facility) sealed boxes were opened by the researcher in her office in Maseru. The researcher took the same number of completed questionnaires from the top of the box as the number of signed informed consent forms.
Level 3: PHC facilities –	**OPD professionals** A lecturer from NUL was requested to act as a mediator in the implementation of the study in the different hospitals.	**Distribution of the questionnaires** The mediator also distributed PHC healthcare professional questionnaires (refer to Annexure C) to all the OPD professionals. They were informed that they did not have to

Organisation level	Recruitment process	Administration of questionnaire
Hospital OPD (including the CHAL hospital)	Goodwill permission (Annexure G) to implement the study in the OPD departments was requested from the hospital administrator. Two empty sealed boxes were kept in the secretary's office of the hospital administrator. **Obtaining informed consent** The mediator distributed two informed consent forms (Annexure J) to the OPD professionals and asked them to read and sign them if they wanted to participate. The OPD professionals were given half a day to decide whether or not to participate in the study. Each healthcare professional received a PHC healthcare professional questionnaire (refer to Annexure C) to complete if they had given informed consent to participate. After an OPD professional had decided to participate, they placed one copy of the signed or unsigned informed consent form in a sealed box in the secretary's office, and they kept the other copy. The reason for this was because the mediator was not supposed to know whether or not the OPD professional had signed the informed consent form.	participate or that they could withdraw at any time – up until they submitted the questionnaire. The OPD professionals had to place the completed questionnaires in a separate sealed box in the secretary's office. To ensure anonymity, the mediator motivated the OPD professionals to all place a questionnaire – even if it was not completed – in a sealed box. **Gathering the signed informed consent forms and completed questionnaires** In the district where certain OPDs were found, collection of the completed sealed boxes was linked to the collection of boxes from the DHMT. The researcher was informed when all the boxes had been filled. During a visit to the district, the researcher collected the completed and sealed boxes from the OPD and DHMT's secretaries' offices. The anonymous (without the name of the hospital) sealed boxes were opened by the researcher in her office in Maseru. The researcher took the same number of completed questionnaires from the top of the box as the number of signed informed consent forms.

1.6.8 Data capturing and cleaning

Once data collection was completed at all levels, the data were cleaned. Data from the questionnaires were entered into an Excel® spread sheet, and all entries were checked to ensure that information from the questionnaire was the same as the data captured on the Excel® spread sheet. This was the responsibility of the researcher. Data capturing was checked after every tenth entry. If an error was found, then every fifth entry was checked. If there were still errors found, then every entry was checked. Encrypted data were then sent electronically to the supervisors and a statistician at the NWU (Potchefstroom Campus).

1.6.9 Data analysis

IBM Statistics for Windows Version 25.0 (SPSS) (2017) was used to analyse the data – with the involvement of a statistician from the NWU (Potchefstroom Campus).

1.6.9.1 Statistical analysis of closed-ended questions

Healthcare professionals of all settings were, according to the 25th, 50th and 75th percentile of the specific ages, divided into four age groups: < 31 years; ≥ 31 years and < 36 years; ≥ 36 years and < 44 years; and ≥ 44 years.

Variables were explained using descriptive statistics that include, *inter alia,* frequencies (n), percentages (%), means, standard deviations.

Statistical significance was agreed with a two-sided probability of $p \leq 0.05$. The practical significance of the results was computed when the results were statistically significant ($p \leq 0.05$).

A **Chi-square test (χ^2)** is a non-parametric statistical method that was used to determine whether there is an association between proportions of two or more categorical variables. It is used when data are expressed in frequencies or when it may be reduced to frequencies. The practical significance of the results was computed when the *p*-value was statistically significant ($p \leq 0.05$) (Marshall & Jonker, 2011:e4).

Cramér's *V* was used to test the practical significance of these associations. Cramér's *V* was interpreted according to the following guidelines (Pietersen & Maree, 2016:234):

- $V = 0.1$, small effect or no practically significant association
- $V = 0.3$, medium effect or practically visible association

- V = 0.5, large effect or practically significant association

A student's *t*-test is a parametric procedure that allows one to determine whether the difference between two groups' means is statistically significant (Schlotzhauer & Littell, 1997:202). The **two-sample *t*-test** is a parametric test to compare two independent samples (Schlotzhauer & Littell, 1997:202). For the two-sample *t*-test (*t*) the effect size was determined using Cohen's *d*. Cohen's *d* was interpreted as follows (Coe, 2002):

- *d* = 0.2 represents a small effect
- *d* = 0.5 medium effect
- *d* = 0.8 represents a large effect

Table 1.15 shows research objectives, elements of questionnaires, levels with specific questions or sections of the questionnaire, and statistical analysis.

Table 1-15: Research objectives, elements of questionnaires, levels with specific questions or sections of the questionnaire, and statistical analysis

Objective	Element	Level	Questionnaire	Section or questions	Statistics
Demographic and employment information.	Background information	Level 1, 2 and 3	Annexure A	Section 1.1	Frequency (%)/Count Chi-square test (χ^2) with Cramér's *V*
			Annexure B	Section 1.1	
			Annexure C	Section 1.1	
To explore the implementation of current HIV/AIDS treatment guidelines processes in Lesotho.	Review of HIV/AIDS treatment guidelines	Level 1, 2 and 3	Annexure A	Section 1.3	
			Annexure B	Section 1.3	
			Annexure C	Section 1.3, 1.9	
	Process – planning	Level 1 and 2	Annexure A	Section 1.4, 1.6, 1.7	
			Annexure B	Section 1.4, 1.6, 1.7	
	Process – training	Level 1, 2 and 3	Annexure A	Question 1.2.1 to 1.2.3.9 and 1.4.3 to 1.4.3.2	
			Annexure B	Question 1.2.3 to 1.2.3.8 and 1.4.3 to 1.4.3.2	
			Annexure C	Section 1.2, 1.9.4, 1.9.6, 1.9.7	
	Process – engaging	Level 1, 2 and 3	Annexure A	Section 1.3, 1.7	
			Annexure B	Section 1.3	

Objective	Element	Level	Questionnaire	Section or questions	Statistics
To explore the implementation of current HIV/AIDS treatment guidelines processes in Lesotho.	Process – engaging	Level 1, 2 and 3	Annexure C	Section 1.3	Frequency (%)/Count Chi-square test (χ^2) with Cramér's *V*
	Process – reflecting and evaluating	Level 1 and 2	Annexure A	Section 1.5, 1.6, 1.7	
			Annexure B	Question 1.4.4 to 1.4.8 Section 1.5, 1.6, 1.7, 1.9.7	
To identify barriers to the implementation of HIV/AIDS treatment guidelines in Lesotho.	Barriers *(Please note that barriers cut across processes and drivers)*	Level 1, 2 and 3	Annexure A	Section 1.8	Frequency (%)/Count Chi-square test (χ^2) with Cramér's *V* Mean ± SD, Two-sample *t*-test with Cohen's *d*
			Annexure B	Section 1.8	
			Annexure C	Section 1.8	
To investigate how implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.	Competencies	Level 1, 2 and 3	Annexure A	Question 1.2.1 to 1.2.3.9.	Frequency (%)/Count Chi-square test (□2) with Cramér's V
			Annexure B	Question 1.2.3 to 1.2.3.8	
			Annexure C	Section 1.2 and 1.9.5	
	Organisation	Level 1, 2 and 3	Annexure A	Section 1.3, 1.4, 1.6, 1.7	
			Annexure B	Section 1.3, 1.4, 1.6, 1.7	
			Annexure C	Section 1.3, 1.4, 1.6, 1.7, 1.9.5, 1.9.6, 1.9.7	
	Leadership	Level 1 and 2	Annexure A	Question 1.2.1 Section 1.5, 1.7, 1.9.7	
			Annexure B	Section 1.4, 1.6, 1.7, 1.9.7	

1.6.9.2 Analysis of open-ended questions

Data obtained from the open-ended questions of the structured questionnaires were analysed through coding. Some of the Creswell's steps for data analysis (cited by Botma *et al*., 2010:224) were used in this study:

- Organising and arranging data into the different questions according to the questionnaire.
- Developing a general sense – Read through all the data of a specific question, obtain a general sense of the information per question and reflect on its overall meaning.
- Writing notes, as well as general thoughts, about the data in the margins.
- Coding the data – Using different excel spread sheet to begin a data analysis with a coding process for each response.
- Describing and identifying themes – Using the coding process to generate a description of the theme of responses.
- Representing findings – Findings were represented in a narrative form to convey the research findings.

1.7 Ethical considerations

1.7.1 Permission and informed consent

The following approval and permissions were obtained before the implementation of the study at the different levels:

- Ethics clearance was obtained from the Health Research Ethics Committee (HREC) of the Faculty of Health Sciences, NWU (NWU-00136-17-S1).
- Permission was obtained from the National Review Board and Ethics Committee of the Lesotho MOH (ID86-2017) to ensure that the study did not cause any harm to the subjects and that the information given by healthcare professionals was protected.
- Goodwill permission was obtained from the following:
    - Level 1: HIV/AIDS programme specific – The manager of the HIV/AIDS programme (refer to Annexure).

- Level 2: DHMT – The DHMT manager in each district (refer to annexure L).

- Level 3: PHC facilities.
  - PHC managers of clinics (refer to annexure N).
  - Chief Executive Officers (CEO) from the hospitals (refer to annexure M).
  - The DHMT manager of each district (refer to Annexure L).
  - Regarding PHC health centres belonging to CHAL, permission letters were also obtained from the CHAL Secretariat (refer to Annexure J).

Witten informed consent for participation in the study was obtained from the eligible healthcare professionals, as described in Table 1-12 to 1-14. Examples of the informed consent forms for the different healthcare professionals in the different levels are attached (Annexures D - G).

Research team members were only allowed to gain access to data after signing a confidentiality agreement.

1.7.2 Anonymity and confidentiality

Both the researcher and the study promoters signed a confidentiality agreement form to ensure anonymity and confidentiality. No names or any other form of identification of the healthcare professionals were used. Information was kept safe and was not shared with other persons.

Data were protected from the time of the face-to-face interviews and will be stored in a locked cupboard in Medicine Usage of South Africa (MUSA) for five years. The data are only accessible if permission from the researcher, promoters and statistician is granted. It was only accessed upon permission from the researcher, promoters and statistician.

1.7.3 Respect for study settings and personnel

Feedback regarding the outcome of the study was provided to relevant role-players, as indicated in Section 1.7.6.

The researcher respected the time of all healthcare professionals and face-to-face interviews were conducted at a time convenient to healthcare professionals. Data-gathering days were corresponded to the managers prior to the onset of the data gathering period. The responsibility of data gathering during face-to-face interviews rested only on the researcher, or mediator where the researcher was not present. In order to give correct information,

healthcare professionals could request clarification on questions they did not understand. Healthcare professionals requested clarification on questions they did not understand in order to give correct information. The research findings will be used for the research purposes of this study only. No personal information of the healthcare professional was captured or mentioned to any personnel of the Lesotho MOH and CHAL.

1.7.4 Justification of the research study

Knowing the factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho could contribute to the improvement of care and treatment of HIV/AIDS patients at different levels of care. Therefore, the implementation research is essential in order to identify gaps in the implementation of HIV/AIDS treatment guidelines and address them through well-defined programme implementation processes.

1.7.5 Benefit-risk ratio

It is the responsibility of the researcher to ensure that the benefits of a specific research project outweigh the risk (Brink *et al*., 2012:42-43).

1.7.5.1 Anticipated benefits of the study

Anticipated benefits of this study have been classified into direct benefits and indirect benefits. The anticipated benefits are as follows:

1.7.5.1.1 Direct beneficiaries

The study does not have direct benefits to healthcare professionals. However, healthcare professionals may feel appreciated because they had the opportunity to share their views and their possible solutions to improve the practice's situation regarding the problems they may experience with the implementation of HIV/AIDS treatment guidelines in Lesotho.

1.7.5.1.2 Indirect beneficiaries

The MOH of Lesotho would benefit as no such study had been carried out on HIV/AIDS treatment guidelines, and this would inform implementation processes and policy. The research will inform future HIV/AIDS treatment guidelines implementation. PHC managers may view the guidelines as an important source of information and promote its use among PHC professionals. It would benefit the PHC professionals in the implementation of the guidelines and increase their acceptance of the process. Patients could have improved health

through the implementation of these guidelines. Society would benefit from well-implemented HIV/AIDS treatment guidelines as they lead to the improved health of people living with HIV/AIDS in Lesotho.

1.7.5.2 Anticipated risks of the study

The **anticipated risks level associated with this study was low to medium**. The **benefits** of conducting this study **outweigh the risk** associated it.

Table 1-16: Risk and precautions of the study

Risks	Precautions
Filling in the structured questionnaire and participating in face-to-face interviews could cause the healthcare professional some emotional distress due to questions he/she regards as sensitive.	During the introductory meetings, all healthcare professionals in all the settings were reminded of their right to withdraw at any stage. The healthcare professionals were assured that their answers were completely confidential. All face-to-face interviews were conducted in the privacy of a specific office. If the healthcare professional showed signs of stress, the face-to-face interview would be stopped.
The foreseen risks would be related to confidentiality. The healthcare professional could be worried that there is a feedback loop between him/her and their managers regarding his/her participation or refusal to participate in the research.	All the researchers involved in the project signed a confidentiality agreement; therefore, no level of management of the Lesotho MOH would be informed about the response profile of healthcare professionals. Healthcare professionals were informed about their right to decline to answer a question during the face-to-face interviews or when completing the questionnaires. The informed consent form was filled and placed in a sealed box separate to the completed questionnaires (Level 3). There was no link between the healthcare professional and his/her informed consent form. The researcher would randomly remove forms from the box. It was not possible to link an informed consent form with a specific healthcare professional.
The healthcare professional could be uncomfortable with answering certain questions.	Healthcare professionals participating in face-to-face interviews were informed about their right to decline to answer a specific question, to skip it or to answer it later. They could also withdraw from the survey altogether. Healthcare professionals in Level 3 could withdraw at any stage before they place the completed questionnaire in the sealed box.

1.7.6 Conflict of interest

There was no conflict of interest because the researcher was not affiliated with the MOH of Lesotho. She is a member of the NUL personnel.

1.8 Thesis structure

The thesis follows the structure stipulated below:

Chapters

Chapter 1	Background information and methodology
Chapter 2	Literature review – Implementation of treatment guidelines
Chapter 3	Results and discussion
Chapter 4	Implementation framework and limitations
Chapter 5	Conclusions and recommandations

Annexures

Questionnaires	Annexure A - C
Informed consent forms	Annexure D - H
Goodwill permission letters	Annexure I - N
Ethics approval letters	Annexure O
Questions and answers	Annexure P

1.9 CHAPTER SUMMARY

Chapter 1 has dealt with the introduction, which highlighted the importance of using HIV/AIDS treatment guidelines in resource-limited settings for successful treatment of HIV/AIDS. However, this depended on how these guidelines were implemented by the HIV/AIDS programme at the primary healthcare level. Therefore, the study evaluated processes, drivers, and barriers to the implementation of HIV/AIDS treatment guidelines in Lesotho and developed a framework for it. The study also covered methodology highlighting study design, the population from three levels of the study which are HIV/AIDS programme, DHMT, and PHC, the study tools were structured questionnaire with open and close-ended questions. It also covered how the questions were developed and administered to the healthcare professionals who were medical practitioners, nurses, and pharmacists. The chapter also covered ethical considerations and data management.

Chapter 2 covers the literature review of the study where the treatment guidelines and a thorough evaluation of the implementation aspects thereof, are addressed. This next chapter will also attempt to address the research question of the study.

CHAPTER 2 IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES

2.1 Introduction

Chapter 2 covers the literature review for the study where treatment guidelines and factors affecting their implementation will be described. Other aspects of implementation such as strategies, stages and outcomes will also be outlined and discussed in detail. Frameworks, theories and models regarding implementation will be described and extensively explored. Implementation processes, drivers and barriers will also be explained and possible links between them explored. Chapter 2 will also attempt to address the research question: How can the implementation of HIV/AIDS treatment guidelines be improved?

It is envisaged that treatment of HIV/AIDS using treatment guidelines in Lesotho will benefit from knowledge generated through high-quality research. In resource-limited settings such as with high disease burden including HIV/AIDS and TB Co-infections, poor access to quality medicines, lack of qualified medical practitioners and use of task shifting, evidence-based guidelines will improve healthcare practice (Howard *et al*., 2018). Evidence-based treatment guidelines can, therefore, positively impact healthcare practice.

2.2 Treatment guidelines

HIV/AIDS treatment guidelines play an important part in ARV regimen selection which, together with drug supply management, also has an impact on patient treatment and care. Major changes that warrant a change in HIV/AIDS management guidelines emanate from regimen change, particularly the first-line regimen (MOH, 2010). This makes the implementation of 2016 HIV/AIDS treatment guidelines important. If the implementation of HIV/AIDS treatment guidelines is successful, patients will benefit from improved care. This section is aimed to improve the understanding of HIV/AIDS treatment guidelines and the implementation thereof.

Clinical guidelines are defined as “systematically developed statements to assist professionals and patient decisions about appropriate healthcare for specific clinical circumstances” (Field & Lohr, 1992). Standard treatment guidelines (STG) are made-up of systematically developed statements which are used to aid decision-making in the treatment of a certain disease (Winfields & Richards, 2004:409). They are intended to guide which drugs should be selected when prescribing. Treatment guidelines are mostly suitable for use in resource-limited

countries where freedom to choose drugs is limited by financial resources and the availability of drugs (Hirnschall *et al.,* 2013:1). Again, treatment guidelines improve rational and cost-effective prescribing, and assist in the continuous care of the patient. According to Winfields and Richards (2004:410), treatment guidelines have educational value for prescribers and other users. Treatment guidelines are used as tools to promote evidence-based practice (Yana & Jo, 2004). Fischer *et al*. (2016) further state that when the current evidence is translated into clinical practice, the quality of care and safety of patients are improved, and this is possible through the development and implementation of treatment guidelines. Treatment guidelines are mainly used for diseases that cause premature mortality, avoidable morbidity or undesirable effects on health-related quality of life (Fischer *et al*., 2016:36).

Treatment guidelines also reduce inappropriate variation in clinical practice which improves quality of care. They also ensure the dissemination of recent advances in medical knowledge into daily clinical practice (Cabana *et al*., 1999). They contribute to quality improvement in healthcare settings and lower morbidity and mortality, and increase cost-effectiveness (Cluzeau *et al.,* 1999: Rychoft & Malone 2000). Furthermore, periodic reviews of treatment guidelines are necessary in order to incorporate new clinical evidence, new drugs and drug formulations, best practices and new strategies in scaling up to include more population groups, such as paediatric patients, teenagers, the elderly, and pregnant and lactating mothers (MOHSW, 2010:ix). Therefore, HIV/AIDS treatment guidelines are an important tool to guide the selection of ARV drug regimens to be used for the successful treatment of HIV/AIDS.

2.2.1 HIV/AIDS treatment guidelines

According to EACS (2008:65) the HIV/AIDS treatment guidelines provide a standardised way of managing HIV/AIDS and other related diseases. The WHO plays an important and leading role in evidence-based periodic reviews of HIV/AIDS treatment guidelines (Gilks *et al.,* 2006:505; Hirnschall *et al*., 2013:1; WHO, 2013:26). This is an advantage because resource-limited countries do not have financial resources and human capacity to carry out their own meaningful research in order to gather evidence for the reviews of HIV/AIDS treatment guidelines (WHO, 2013:26). Evidence provided in the WHO guidelines use the GRADE system (Grading of Recommendations, Assessment, Development, and Evaluation). This approach is used to review evidence according to two formats. The first format is the level of evidence that is rated as high, moderate, low or very low. The second format is the strength of recommendation which is measured by benefits and risks, values and preferences

(acceptability), costs and financial implications (resource use) and feasibility. These are further broken down at individual, clinical and policymaker levels where either strong recommendations or conditional recommendations are given in order to guide decision-making (WHO, 2013:52-53).

HIV/AIDS treatment guidelines are intended to summarise current knowledge of HIV/AIDS. Treatment guidelines need regular updates as new HIV/AIDS information becomes available. However, countries are still advised to evaluate and eventually adopt reviewed recommendations through their HIV/AIDS treatment guidelines committees (Hirnschall *et al.,* 2013:1).

The approach to HIV/AIDS treatment taken by developed and resource-restricted countries differ. Treatment of HIV/AIDS in the developed world is patient-based managed by specialists with highly technologic laboratory monitoring tests (Gilks *et al*., 2006:505). In Europe, physicians rely on their own experience and other sources of information, and most countries do not have a national recommendation for the treatment of HIV/AIDS (EACS, 2008:65). Clinical practices in ARV therapy vary according to “drug registration, national policies, local availability, reimbursement and access to treatment” (EACS, 2008:65). However, for resource-limited countries, the public health model is used in order to have simplified HIV/AIDS treatment guidelines, which are central in the management of HIV/AIDS (Gilks *et al*., 2006:505). Therefore, task shifting becomes easier with the presence of evidence-based treatment guidelines, because clinical decisions are not affected by the absence of qualified medical healthcare professionals.

2.2.2 HIV/AIDS treatment strategies

Lesotho adopted global HIV treatment strategies from the WHO which were used to set targets and explain how these targets can be met by the country. There are three strategies that were adopted in 2015: the “test and treat” strategy, the “90:90:90 target by 2020” strategy (Fonjungo *et al*., 2016; Labhardt *et al*., 2016:329; UNAIDS, 2015:1) and the “ending AIDS by 2030” strategy (Kripke *et al.,* 2016). After the “test and treat” strategy was adopted – which aims to test and start ARV treatment immediately – the number of people who were tested for HIV and who are on treatment increased dramatically. This is in line with “90:90:90 target by 2020” which aims that of the people living with HIV, 90% should know their HIV status; of those who know their status, 90% should be on ARV treatment; and of those who are on ARV treatment, 90% should have viral suppression (Bemelmans *et al*., 2016; Fonjungo *et al*., 2016; Labhardt *et al*., 2016:329; UNAIDS, 2015:1). This is also in line with the target of the WHO of

“ending AIDS by 2030” (Kripke *et al*., 2016), which means that all patients who have HIV will be on ARV treatment, which will prevent new infections and will also hold disease progression.

Other prevention strategies such as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) were also adopted, which means that anyone who tests negative for HIV, but is at risk of getting HIV, is given ARVs for prevention, and those with HIV exposure can go to facilities to get PEP (Stover *et al*., 2016). These strategies led to a rapid increase in the numbers tested and treated. Treatment guidelines were needed to guide professionals in scaling up HIV treatment through ‘prevention as a treatment’ which means that patients are put on treatment so that the viral load can be lowered to eventually reduce the rate of viral infection among individuals. In order to address the above strategies, the Government of Lesotho adopted a set of reviewed HIV/AIDS treatment guidelines. This set covered the three strategies: “test and treat”, “90:90:90 target by 2020” and “ending AIDS by 2030”. Lesotho also adopted treatment and PrEP as prevention strategies (MOH, 2016:3).

These guidelines introduce ARV regimens and guidance to switching from first-line (this is the ARV regimen used soon after diagnosis according to guidelines that are aimed for use in the majority of patients) to second-line ARV drugs (this is the ARV regimen, also stipulated by guidelines, that is used after the first regimen shows virologic failure). Furthermore, treatment failure and monitoring are outlined (MOH, 2016:39). The guidelines also address matters relating to adherence to ARVs and disclosure of one’s HIV/AIDS status. Additionally, the management of opportunistic infections and co-infections are included in the current guidelines. Nutrition and wellness programmes are also covered. PEP, which covers occupational exposure and sexual exposure, is also outlined (MOH, 2016:3). In addition, an infection control programme, and monitoring and evaluation are covered. These are the basic components, and other HIV/AIDS relevant topics may be incorporated as needed (MOH, 2016:45). Table 2-1 in Annexure E shows the detailed contents of HIV/AIDS treatment guidelines.

To summarise, Section 2.2 covered treatment guidelines in detail, including HIV/AIDS treatment guidelines, with the aim to increase the reader’s understanding of why guidelines play a key role in HIV/AIDS treatment and care. The HIV/AIDS guidelines themselves, strategies such as “90:90:90 by 2020” and “test and treat” (used to eradicate new infections) and use of ARVs (to prevent new infections) have been outlined (see Section 2.2.2). It is hoped that by 2030 AIDS will no longer be a problem; this means that people will be able to live with HIV and not develop AIDS (Bemelmans *et al.,* 2016). This is a crucial strategy in the history

of HIV/AIDS treatment. Once the strategies have been launched and the content of HIV/AIDS treatment guidelines has been adopted, the next stage is to know how to implement these guidelines. Being aware of factors that can affect implementation is important. The next section discusses the various aspects of implementation.

2.3 Implementation

A discussion of the factors affecting the implementation of treatment guidelines pave the way for a better understanding of the implementation process, which in essence can be the implementation of any project, research, policy, etc. (Franckie *et al*., 2008:38). There is a need to ensure that treatment guidelines fulfil the purpose for which they are intended. One way to ensure that this takes place is to ensure that treatment guidelines are implemented properly. The implementation of treatment guidelines, together with implementation research, has to be carried out at different stages in order to ascertain compliance (Ehrenkranz *et al.,* 2018). There are several definitions of implementation that will assist the reader in understanding the implementation of treatment guidelines.

2.3.1 Implementation as a concept

Fixsen *et al.* (2005:11) describe implementation as "several activities aimed at putting an activity or programme of known dimensions into practice". According to Rabin *et al.* (2008:17), implementation is the "collection of processes intended to get an intervention into use within an organisation". Another definition of implementation is: "a critical gateway between adoption, transition period and routine use of intervention as an organisational decision" (Hwang *et al.*, 2016:976). According to Greenhalgh *et al*. (2008:6), implementation is the last stage of a "diffusion-dissemination-implementation continuum" where, diffusion is the passive, untargeted and unplanned spread of new practices; dissemination is the active spread of new practices to the target audience using planned strategies (Greenhalgh *et al.*, 2008:6); and implementation is the process of using or integrating new practices into a setting (Greenhalgh *et al.*, 2008:6, 201; Rabin & Brownson, 2012:23).

The definition relevant to this study is "diffusion-dissemination-implementation continuum" (Greenhalgh *et al*., 2008:6). Analysing implementation in Lesotho using this definition, when HIV/AIDS treatment guidelines are implemented, what seems to take place is only diffusion. However, if Lesotho, as a resource-limited country, could adopt the diffusion-dissemination-implementation continuum definition in full, successful implementation of treatment guidelines would be attained. This would lead to better treatment outcomes. More so, because Lesotho

has recently adopted the “treatment as prevention” strategy, which is in the 2016 HIV/AIDS treatment guidelines (MOH, 2016:3).

2.3.2 Factors influencing the implementation of treatment guidelines

Factors that affect the implementation of treatment guidelines brings to light what needs to be done and what needs to be avoided, in order to benefit from the provided clinical guidance. Dissemination alone is not enough when guidelines are being put into practice. The implementation consists of effective communication strategies and identification, and overcoming of barriers to change. This can be achieved by using effective administrative and educational techniques in the practice setting (Davis & Taylor-Vaisey, 1997:410). Grol *et al*. (1998:861) add that for clinical practice guidelines to be used in practice, there must be specific attributes – based on scientific evidence – which have precise definitions and are tested for feasibility and acceptance. Grol *et al.* (1998:861) show that people who set evidence-based guidelines require an understanding of the attributes of effective treatment guidelines. According to Franckie *et al*. (2008:38), characteristics of the guidelines, implementation strategies, professionals and patients, and environmental factors influence the implementation of treatment guidelines.

Guidelines that are simple, as opposed to those that are complex, are more likely to be used; therefore, it is urged that the developers of treatment guidelines should take the limit complexity of guidelines in order to improve their use (Davis & Taylor-Vaisey, 1997:413). Implementation strategies include educational materials, meetings, reminders, and audit and feedback (Davis & Taylor-Vaisey, 1997:412; Grimshaw *et al*., 2006:s17). Grimshaw *et al.* (2006:s18) further assist by listing the following classification of professional interventions from Cochrane which is the Effective Practice and Organisation of Care (EPOC) Taxonomy. Table 2-1 outlines the classification of professional interventions (Grimshaw *et al.,* 2006:s18).

Table 2-1: The classification of professional interventions

Professional interventions	Explanation
Distribution of educational materials	The published or printed recommendations for clinical care – including clinical practice guidelines, audio-visual materials, and electronic publications – will be distributed.
Educational meetings	The attendance of conferences, lectures, workshops, or traineeships by health care providers.
Local consensus processes	A discussion is held to facilitate an agreement that the chosen clinical problem was important, and the approach to managing the problem was appropriate.
Educational outreach visits	Use of a trained person – who met with providers in their practice settings – to give information with the intent of changing the provider's practice.
Local opinion leaders	Use of providers chosen by their co-workers as 'educationally influential'. Investigators must have clearly stated that their colleagues identified the opinion leaders.
Patient-mediated interventions	Providers were given new clinical information such as T-lymphocyte Bearing CD4 Receptor (CD4) test results (not previously available) which were collected directly from patients.
Audit and feedback	A summary of the clinical performance of healthcare collected over a specified period of time.
Reminders	Patient- or encounter-specific information provided verbally, on paper or on a computer screen that is designed or intended to prompt a health professional to recall information.
Marketing	A survey of targeted providers aimed to identify barriers to change, and the subsequent development of an intervention that addresses identified barriers – this is achieved through interviews or group discussion (focus groups).
Mass media	The varied use of communication that targets a large number of people – this includes television, radio, newspapers, posters, leaflets, and booklets – alone or in conjunction with other interventions.

Source: EPOC Taxonomy (Grimshaw *et al.*, 2006:s18).

Some guidelines target only physicians, while others can be used by nurses, physicians and pharmacists. Healthcare professionals may accept the use of guidelines according to their age – younger professionals may use guidelines more than older professionals because they rely more on their experience (Grimshaw *et al.,* 2006:s18). The HIV/AIDS treatment guidelines usually target PHC professionals because of the public health approach to HIV treatment (MOH, 2016).

In summary, factors affecting the implementation of treatment guidelines include characteristics of the guidelines, implementation strategies, professionals and patients, and

environmental factors, and this adds information useful to the successful implementation of HIV/AIDS treatment guidelines (Cochrane *et al.,* 2007; Gurses *et al.,* 2010). Therefore, it would be useful to look at implementation itself to better understand and ensure that evidence-based guidelines benefit PHC practice in a resource-limited setting.

2.3.3 Implementation strategies

Implementation strategies are "defined as procedures or methods used to improve the adoption, implementation and sustainability of a clinical programme or practice" (Proctor *et al*., 2013). When implementation of treatment guidelines take place implementation strategy has to be part of the implementation plan (Varsi *et al.,* 2016). Proctor *et al*. (2013) state that the how-to part of changing healthcare practice is the implementation strategy. The implementation strategy can be used as a single or discrete component and example is disseminating educational materials, reminders, and audit and feedback (Powell, *et al*., 2019). Multifaceted strategies can be built by combining any of the 73 discrete implementation strategies that have been described in published taxonomies (Powell *et al*., 2017b). Careful selection of implementation strategies will greatly benefit the implementation process.

Assessing factors that may influence implementation processes and outcomes is the first step in selecting and tailoring implementation strategies (Wensing *et al.*, 2011:1). The study of Flottorp *et al.* (2013) provides examples such as the characteristics of the innovation, the characteristics of the setting in which it will be implemented, the characteristics and preferences of involved stakeholders, and other potential barriers and facilitators.

The study of Wensing *et al.* (2009:94), potentially links these implementation strategies to barriers, facilitators and contextual features, but states that it should remain a creative, emergent and non-systematic process that occurs during implementation efforts. Proctor *et al.* (2013) further assist by providing a guide on how to select implementation strategies. This is done by giving fundamental principles for naming, defining and specifying the strategies. Powell *et al.* (2015) compile implementation strategies through the use of the Expert Recommendation for Implementation Change (ERIC) from a previous list of implementation strategies..

2.3.4 Measuring implementation leadership

The importance of leadership in implementation of evidence based practice has been established (Aarons *et al.*, 2012). Implementation leadership is said to contribute to

implementation success (Michaelis *et al*., 2010:408). Transactional leadership is an exchange relationship between managers and employees, and together they set mutually agreed-upon goals, follow-up the progress and link accomplishments to rewards (Mosson *et al.,* 2018). Transformational leaders motivate employees to achieve greater goals and to perform at a higher level than expected (Mosson *et al.,* 2018). Four subscales are used when measuring transformational leadership: idealised influence, inspirational motivation, intellectual stimulation and individualised consideration. According to Aarons *et al.* (2015), emerging evidence shows that there is a positive relationship between transformational leadership and effective implementation.

Aarons *et al.* (2014) developed the Implementation Leadership Scale (ILS) which measures specific behaviours that leaders exhibit in order to promote effective implementation. In the study of Aarons *et al.* (2014) therapists used their perspective to measure implementation leadership and rated their direct supervisor with the ILS. The ILS is a 12-item scale that measures leader behaviours relevant to the implementation of Evidence-based Practices (EBPs) with four subscales: proactive, knowledgeable, supportive and perseverant. Each item is measured on a continuum from 0 (not at all) to 4 (very great extent), with each subscale representing the mean of the items within that dimension. The ILS has demonstrated excellent internal consistency reliability as well as convergent and discriminant validity. ILS can inform an understanding of the influences and effects of leadership based on EBP implementation. ILS can also be used to identify areas to develop on existing leadership (Aarons *et al.,* 2014). Table 2-2 shows the ILS factor inter-correlations (Aarons *et al.,* 2014).

Table 2-2: Implementation Leadership Scale factor inter-correlations

Factor	1	2	3	4
Proactive leadership	1.0			
Knowledgeable leadership	0.73	1.0		
Supportive leadership	0.77	0.79	1.0	
Perseverant leadership	0.79	0.77	0.80	1.0

Note: N=229; All correlations, p <0.001. Factor correlation ranged from 0.73 to 0.8 suggesting higher-order implementation leadership factors

2.3.5 Implementation outcomes and measurement

Many researchers have measured the implementation of a guideline or programme with outcomes that are related to the guidelines or programme or treatment outcome, but this does not show if the implementation succeeded or not (Proctor *et al.,* 2011). Therefore, the implementation itself has to be measured, and there should be a link between implementation success, a guideline or programme outcome (Proctor *et al.,* 2011). A conceptual framework of an implementation outcome was developed which distinguishes between three distinct but interrelated types of outcomes: implementation, service and client. Implementation outcomes precede service and clinical outcomes. Both service and clinical outcomes are impacted by implementation outcomes (Proctor *et al.,* 2009:24). According to Proctor *et al.* (2009:24), implementation outcomes are "acceptability, adoption, appropriateness, costs, feasibility, fidelity, penetration and sustainability". Service outcomes are "efficiency, safety, effectiveness, equity patient-centeredness, and timeliness". Client outcomes include "satisfaction, function, and symptomatology" (Proctor *et al.,* 2009:24).

Acceptability denotes the perception – agreeable, palatable, or satisfactory – found among implementation stakeholders who are given treatment, service, practice or innovation. According to Proctor *et al*. (2009:24), rated acceptability is presumed to be dynamic and changes with experience and can be measured through stages of implementation. *Adoption* is another term used to measure implementation outcome. It refers to the "intention, initial decision, uptake, or action to try or employ an innovation or evidence-based practice" (Proctor *et al*., 2009:24; Rabin *et al*., 2008; Rye & Kimberly, 2007). In the study of Haug *et al.* (2008) pre-post items were used to capture adoption of evidence-based practices for substance abuse providers. *Appropriateness* is the perceived fit, relevance or compatibility of the innovation or evidence-based practice for a given practice setting, provider or consumer. Appropriateness can also be the perceived fit of the innovation to address a particular issue

or problem. In the study of Bartholomew *et al*. (2007), appropriateness was assessed using a rating scale for the training among substance abuse counsellors who attended the training in dual diagnosis and the therapeutic alliance.

Implementation *cost* is defined as the impact of a cost on implementation effort (Proctor *et al.,* 2009). The costs of a particular intervention, the implementation strategy used and the location of service delivery directly determine the cost of implementing a treatment. The study of Ronckers *et al.* (2006) identified the components and their costs for a community-based heart health programme. *Feasibility* is the extent to which a new treatment or an innovation can be successfully used within a given setting (Karsh, 2004). The study of Hides *et al*. (2007) assessed the feasibility aspects of using a screening tool for co-occurring mental health and substance use disorders. *Fidelity* compares the intervention prescribed by programme developers in the original protocol with the intervention that was implemented (Dusenbury *et al*. 2003; Rabin *et al*. 2008). There are five implementation fidelity dimensions: adherence, quality of delivery, programme component differentiation, exposure to the intervention and healthcare professional responsiveness or involvement (Dane and Schneider, 1998: Mihalic, 2004). *Penetration* is the integration of practice within a service setting (Proctor *et al*., 2009). Penetration is calculated by "the number of providers who deliver a given service or treatment, divided by the total number of providers trained in or expected to deliver the service" (Proctor *et al.,* 2009). *Sustainability* is defined as the extent to which a newly implemented treatment is upheld (Rabin *et al*., 2008). According to Proctor *et al*. (2011) the term 'sustainability' does not appear often in empirical articles for measuring sustainability in innovation, rather, appears more frequently in conceptual papers.

Proctor *et al.* (2009) designed a formula that can be used to measure implementation success:

$$I = f\ \mathrm{E} + \mathrm{IOs}$$

where *I* is successful implementation, E is effectiveness and IO is implementation factors.

In a situation where evidence-based treatment is costly, its acceptability might be moderate and its sustainability low:

Implementation success = *f* of effectiveness (high) + acceptability (moderate) + sustainability (low)

In another situation, a given treatment might be only moderately effective but highly acceptable to stakeholders because current care is poor, the treatment is inexpensive and current training protocols ensure high penetration through providers:

Implementation success = *ƒ* of effectiveness (moderate) + acceptability (high) + potential to improve (high) + penetration (high)

Measuring implementation outcomes may assist decision-makers in determining and measuring implementation success.

This can be compared with Promoting Action on Research Implementation in Health Service (PARiHS) Kitson *et al*. (2008:1) where successful implementation is also measured using:

$$SI = f(E,C,F)$$

where SI is successful implementation, E is evidence, C is context and F is facilitation.

PARiHS stipulates that successful implementation of evidence into practice is a function of three broad interactive elements: evidence, context and facilitation (Kitson *et al*. 2008:1) . It is said that for successful implementation to take place, a) scientific evidence has to align with professional and patient beliefs, b) healthcare context becomes receptive to implementation and is composed of supportive leadership, culture and evaluation systems and c) the mechanisms to facilitate implementation are in place (Rycroft-Malone *et al.,* 2002). However, these two measurements (implementation outcome and PARiHS) cannot be compared as they measure implementation success at different angles – one measures implementation outcomes and the other may determine implementation success even before it starts.

These implementation outcomes are relevant to the study and can be used to measure the implementation of HIV/AIDS treatment guidelines. One can say that health professionals accept the use of HIV/AIDS treatment guidelines because they are appropriate and implementation cost is minimal as they stipulate regimes used by many patients. It is feasible to use these guidelines in all PHC facilities. It is not difficult to measure fidelity using adherence to guidelines that have penetrated into the PHC setting. The use is sustainable and can only change after reviewing the guidelines and implementing new ones.

To further understand implementation, Franckie *et al*. (2008:38) describe factors affecting implementation: characteristics of the guidelines, implementation strategies, professionals, patients, and environment and outlined the EPOC Taxonomy. Proctor *et al.* (2013) define

implementation strategies as techniques or methods used to improve the adoption, implementation and sustainability of a clinical programme or practice. Implementation strategy includes single components, such as disseminating educational materials, reminders, and audit and feedback, and multi-faceted implementation strategies which were built by combining the 73 discrete implementation strategies that have been described in published taxonomies. Powell *et al*. (2015) compiled implementation strategies through ERIC. Several authors (Flottorp *et al.,* 2013; Proctor *et al.,* 2013; Wensing *et al.,* 2009:94) describe ways in which an implementation strategy can be selected.

In conclusion, Chamberlain *et al.* (2011) developed the SIC as a measure to monitor and evaluate the completion of implementation activities, the length of time taken to complete activities and the proportion of activities completed. Several authors (Aarons *et al*., 2012; Damschroder *et al*., 2009; Fixsen *et al*., 2005) have also described implementation stages and phases. Proctor *et al.* (2009), outline the implementation outcomes and how to measure them – this should not be a clinical or treatment outcome. A conceptual framework of implementation outcomes was developed which distinguishes between three distinct but interrelated types of outcomes: implementation, service and client (Proctor *et al.* 2009). Proctor *et al*. (2009) designed a formula that can be used to measure implementation success. Other authors (Rycroft-Malone *et al*., 2002) also measured successful implementation. However, Proctor *et al*., (2009) measure success by using outcomes, while Rycroft-Malone *et al*., (2002) can determine if the implementation will succeed or not.

2.3.6 Implementation of HIV/AIDS treatment guidelines

Guidelines are intended to improve the quality of practice in a setting (Davis & Taylor-Vaisey, 1997). However, the integration of treatment guidelines into workflow may increase the amount of work professionals do, which may lead to resistance to their implementation (May *et al.,* 2014:293; Ploeg *et al.,* 2007; Richens *et al.,* 2004). If treatment guidelines are formulated away from the setting in which they are used, professionals fail to see their relevance in daily practice and do not use them. Efforts have to be made to link evidence and practice to make it easier for guidelines to be implemented.

The quality of guidelines also matters. This leads to evidence-based treatment guidelines having a better chance to be properly implemented in order to change healthcare practice. A way in which successful implementation of treatment guidelines can be predicted and measured is through process models, frameworks and theories (Nilsen, 2015). Gardner *et al*. (2010) state that the use of theory-based and pre-specified constructs assists in generalising

findings and integrating them with results from other studies in a simple manner. This is done to build a stronger evidence base to a) identify factors that predict or influence implementation success, b) guide healthcare professionals how to adapt programmes and tailor implementation strategies and c) provide a foundation on how to build higher-order implementation theories and models (Gardner *et al*., 2010).

2.4 Process models, frameworks and theories

Implementation scientists have developed different types of models, frameworks and theories (Pfadenhauer *et al*., 2017:21), which can be used for complex interventions, in order to build knowledge around the subject (Craig *et al.,* 2008). However, selecting relevant theories can be challenging as there is no consensus as to whether to use one or more than one theory to obtain the desired results (French *et al*., 2009). Eccles *et al*. (2009:18) argue that there is a need to use theoretical approaches more in order to solve the translational gap in implementation research, as this offers a) generalisable frameworks that can be used across different settings and individuals; b) an opportunity for increased knowledge; and c) an explicit framework that can be analysed. Similarly, Cane *et al*. (2012:37), Martinez *et al.* (2014:18) and Michie *et al.* (2011:42) agree that in order to reduce the research-practice gap, models, theories and frameworks have to be used.

A theory may be defined as “a set of analytical principles, or statements to structure observations or understanding of the world around” (Carpiano & Daley, 2006:564; Wacker, 1998:361). In other words, theories are made up of definitions of variables, a domain where a theory applies, a set of relationships between the variables and specific predictions (Hunt, 1991). Bartholomew and Mullen (2011) have defined theory as a logical, organised description of constructs, and the specific causal relationships between constructs.

A model is defined as “a deliberate simplification of a phenomenon or a specific aspect of a phenomenon”. Cairney (2012) states that models can have value even if they do not accurately represent reality. However, models are closely related to theory, and the difference between the two often is not clear (Tabak, *et al.,* 2012). Models can be described as theories with a narrowly defined scope of explanation. Frankfort-Nachmias & Nachmias (1996:38) states that a model is descriptive while a theory is both explanatory and descriptive.

Tabak *et al*. (2012:337) show that a framework denotes a structure, overview, outline, system or plan consisting of various descriptive categories such as concepts, constructs or variables, and the relationship between the categories is thought to account for a phenomenon. It is

observed that frameworks describe phenomena by fitting them into categories but do not provide explanations (Frankfort-Nachmias & Nachmias, 1996:38). However, Moullin *et al*. (2015) break frameworks down into descriptive, prescriptive, explanatory and predictive. A descriptive framework defines the properties, characteristics and/or qualities of implementation, while a prescriptive framework offers direction to the implementation process through a series of steps or procedures. An explanatory framework stipulates the linkage and/or relationships between framework concepts. A predictive framework hypothesises or proposes directional relationships between concepts of implementation (Moullin *et al*., 2015).

A conceptual framework provides a frame of thinking and a guide for action and interpretation (Field *et al.,* 2014:172). Tabak *et al.* (2012) reiterate that the potential benefits obtained from using conceptual frameworks lead to a systematic knowledge translation process and, consequently, a change of practice and the spread of evidence. Moreover, Farley *et al.* (2013) define a framework as a graphical or narrative representation of key factors, concepts or variables to explain an implementation phenomenon and, as a minimum, needs to include steps or strategies for implementation.

Nilsen (2015) has grouped similar theories, models, and frameworks through a synthesis of the literature. Nilsen (2015) explains that there are three overarching aims of the theories, models, and frameworks identified in implementation science. The first aim is to describe and guide the process of translating research into practice, the second is to understand and explain what influences an implementation outcome and the third is to evaluate implementation. The second aim is further broken down to determinant frameworks, classic theories, and implementation theories based on the description of their origins, how they were developed, and knowledge source they drew on, stated aims and applications in implementation science.

Nilsen (2015) mentions five categories of theoretical approaches in implementation science: process models, determinant frameworks, classic theories, implementation theories and evaluation frameworks. It is useful to outline them briefly in order to increase the reader's understanding of what they entail.

2.4.1 Process models

According to Nilsen (2015), process models are models that propose a number of steps to follow in the process of translating research into practice. He also mentions that the aim of process models is to describe and guide the process of translating research into practice. Action models or planned action models also qualify as process models. These models

provide practical guidance in the planning and execution of implementation endeavours and implementation strategies to facilitate implementation (Nilsen, 2015). Some process models outline the phases of research and practice – from discovery to the production of research-based knowledge, its implementation and use in different settings. One example of these process models is the Knowledge Model of Knowledge Translation (Huberman 1994:13; Wilson *et al.*, 2011:46). Similarly, examples of action models include the Stetler model (Stetler *et al*., 2010:51), ACE Star Model of Knowledge Transformation (Stevens, 2013:4) and the Knowledge-to-Action Framework (Field *et al.,* 2014; Graham & Titroe, 2009). "How to implement" models include models such as those developed Grol and Wensing (2004:557), Pronovost *et al.* (2008) and Quality Improvement Framework (Meyers *et al*., 2012:462).

2.4.2 Determinant frameworks

According to Nilsen (2015), determinant frameworks explain the general type of determinants (for example, adherence to clinical guidelines) that are hypothesised or are found to influence implementation outcome. Each type of determinant includes barriers and enablers that are considered as independent variables which can influence implementation outcomes (dependent variables) (Nilsen, 2015). Some frameworks hypothesised the relationships (Durlak & DuPre, 2008:327; Greenhalgh *et al*., 2005; Gurses *et al*., 2010:s282), while others recognised such relationships without describing the actual relationship them (Damschroder *et al*., 2009:50). Information about what affects implementation outcomes is also essential for designing and executing implementation strategies aimed at changing relevant determinants. However, the determinant frameworks do not show how change takes place (Nilsen, 2015).

Determinant frameworks were formulated in different ways: some were developed by synthesising results of empirical studies of barriers to implementation success (Grol *et al*., 2005) and other frameworks relied on existing determinant frameworks and theories in various disciplines, for example, the CFIR. Several frameworks were formulated from the originator's own experience in implementing the new practice, for example, the Understanding–User–Context Framework (Jacobson *et al*., 2003:94) and the Active–Implementation Framework (Blasé *et al*., 2012). The PARiHS framework (Kitson *et al.*, 1998, Rycroft–Malone, 2010) emerged from observations that successful implementation in the healthcare system consists of three key determinants: evidence, context and facilitation. Another approach to developing determinant frameworks was followed in the development of the Theoretical Domains Framework (TDF) (May *et al*, 2009:29; Michie *et al*., 2014). This framework was developed from the synthesis of 128 constructs related to behaviour change found in 33 behaviour

change theories, which included many cognitive behaviour changes. Its constructs were sorted into 14 theoretical domains such as knowledge, skills, intentions, goals, social influences and beliefs about capabilities. Nilsen (2015) states that determinant frameworks show a systematic approach to implementation because they point to multiple levels of influences and recognise that there are relationships within and across the levels and different types of determinants.

2.4.3 Classic theories

Classic theories are external to implementation science and are borrowed from psychology, sociology and organisational theory (Nilsen, 2015). Classic theories describe how change occurs without necessarily intending to bring about change. In psychological behaviour, change theories, for example, the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Social Cognitive Theory (Bandura, 1986) and the Theory of Interpersonal Behaviour (Traindis, 1979), are widely used to define a “clinical behaviour” change in implementation science. Other theories explain the development of clinical decision-making and implementation of evidence-based practice, for example, the Cognitive Continuum Theory (Harmond, 1985), the Novice-Expert Theory (Benner, 1984) and Habit Theories (Ouelette, 1998:54).

In order to understand and explain organisational influences, theories concerning organisational culture, organisational climate, leadership and organisation learning can be used. These include the Situated Change Theory (Orlicowski, 1994:63) and Institutional Theory (Scott, 1995) – their application in implementation science, though, is limited. However, the Theory of Diffusion has been widely used in implementation science as it shows a notion of innovation attributes such as relative advantage, compatibility, complexity, trialability and observability (Rogers, 2003). This theory also assesses how the characteristic of an implementation object (clinical guidelines) influences the implementation outcome. This theory also shows the significance of intermediary actors such as opinion leaders, gatekeepers and change agents for successful implementation (Rogers, 2003)..

2.4.4 Implementation theories

According to Nilsen (2015), implementation theory attempts to describe the causal mechanism of implementation. This is similar to programme theory which tries to explain the causal mechanisms linking an intervention to the outcome (Pfadenhauer *et al*., 2017:21). Implementation Climate (Michie *et al.*, 2014; Powell *et al*., 2017a), Absorptive Capacity (Zahra & George, 2002:185) and Organisation Readiness for Change (Weiner, 2009:67) are some of

the examples of implementation theories. Capability, Opportunity, Motivation and Behaviour (COM-B) (Cornell *et al*., 2015:34; Praveen *et al*., 2014:e54) is another applicable theory that identifies motivation as a process that energises and directs behaviour. Opportunity and capability can influence motivation while enacting behaviour can alter capability, motivation, and opportunity (Michie *et al*., 2014). Likewise, the Normalisation Process Theory (NPT) (de Brún *et al*., 2016:346; May & Finch, 2009:535) identifies four determinants that embed complex interventions in practice and the relationship between these determinants.

2.4.5 Evaluation frameworks

This category of frameworks has a structure for evaluating implementation endeavours. Both Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) (Glasgow *et al*., 1999:1322) and Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation-Policy, Regulatory, and Organisational Constructs in Educational and Environmental Developments (PRECEDE-PROCEED) (Green & Kreuter, 2005) specify implementation aspects that should be evaluated as part of intervention studies. Proctor *et al*. (2011:65) formulated a Framework of Implementation Outcomes that can be used to evaluate implementation endeavours. There are eight constructs that are conceptually distinct for potential evaluation: acceptability, adoption, appropriateness, costs, feasibility, penetration and sustainability. The NPT (de Brún *et al*., 2016:346; McEvoy *et al*., 2014:2) and TDF (Birken *et al.,* 2017:2; Fleming *et al*., 2014; Phillips *et al*., 2015:139) and COM-B (Cornell *et al*., 2015:34; Praveen *et al*., 2014:e54) have been widely used as evaluation frameworks. Equally, the EBP implementation scale is a specific scale used to measure the extent to which EBP has been implemented. Additionally, PARiHS, the CFIR and TDF have instruments that can be used to serve the evaluation purpose. The Implementation Climate (Powell *et al*., 2017a) and the Organisational Readiness for Change can also be used in this category. Table 2-3 introduces five categories of theories, models and frameworks in implementation science

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Table 2-3: Five categories of theories, models and frames used in implementation science

Category	Description	Examples
Process model	Specify steps (stages or phases) in the process of translating research into practice, including the implementation and use of research. The aim of process models is to describe and/or guide the process of translating research into practice. An action model is a type of process model that provides practical guidance in the planning and execution of implementation endeavours and/or implementation strategies to facilitate implementation.	Model by Huberman (1994); the Stetler Model (Stetler *et al*., 2010); the Academic Centre for Evidence-based Practice (ACE) Star Model of Knowledge Transformation (Stevens, 2013); the Knowledge-to-Action Model (Graham *et al*., 2006); model by Grol and Wensing (2004:s57); model by Pronovost *et al*. (2008) and the Quality Implementation Framework (Meyers *et al.* 2012).
Determinant frameworks	Specify types (classes or domains) of determinants and individual determinants, which act as barriers and enablers (independent variables) that influence implementation outcomes (dependent variables). Some frameworks also specify relationships between some types of determinants. The overarching aim is to understand and/or explain influences on implementation outcomes, such as predicting outcomes or interpreting outcomes retrospectively.	PARiHS (Kitson *et al.* 1998; Rycroft–Malone, 2010); Active Implementation Frameworks (Blasé *et al.,* 2012; Holmes *et al*., 2012); Understanding-User-Context Framework (Jacobson *et al*., 2003); Conceptual Model (Greenhalgh *et al*., 2004); framework by Grol *et al*., (2005); framework by Cochrane *et al*. (2007); Ecological Framework by Durlak and DuPre (2008); the CFIR (Damschroder *et al*., 2009); framework by Gurses *et al*., (2010); framework by Ferlie and Shortell (2001) and TDF (Michie *et al*., 2014).
Classic theories	Theories that originate from fields external to implementation science, such as psychology, sociology and organisational theory, which can be applied to provide the understanding and/or explanation of aspects of implementation.	Theory of Diffusion (Rogers, 2003), social cognitive theories, theories concerning cognitive processes and decision-making, social networks theories, social capital theories, communities of practice, professional theories and organisational theories (Rogers, 2003.
Implementation theories	Theories that have been developed by implementation researchers (from scratch or by adapting existing theories and concepts) to provide an understanding and/or an explanation of aspects of implementation.	Implementation Climate (Klein & Sora, 1996); Absorptive Capacity (Zahra & George, 2002); Organisational Readiness (Weiner, 2009:67); COM-B (Michie *et al*., 2011) and the NPT (May & Finch, 2009).
Evaluation frameworks	Specify aspects of implementation that could be evaluated to determine implementation success.	RE-AIM (Glasgow e*t al.,* 1999); PRECEDE-PROCEED (Green & Kreuter, 2005) and the framework by Proctor *et al.* (2011:65).

Source: Nilsen, 2015

Abbreviation	Full out of the abbreviation
CFIR	Consolidated Framework for Implementation Research
CIHR	Canadian Institutes of Health Research
COM-B	Knowledge, Capacity-Opportunities-Motivation-Behaviour
Conceptual Model	Conceptual Model for Considering the Determinants of Diffusion, Dissemination, and Implementation of Innovations in Health Service Delivery and Organization (full title)
K2A	Knowledge-to-Action
PARiHS	Promoting Action on Research Implementation in Health Services
PRECEDE-PROCEED	Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation-Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development
RE-AIM	Reach, Effectiveness, Adoption, Implementation and Maintenance

It can be concluded that

- Nilsen‘s evaluation of the implementation of theories, models and frameworks is important and useful for implementation research.
- Determinant frameworks are relevant to this research because they include the CFIR and PARiHS which are determinants of implementation outcome that could also cover enabler and barriers to implementation.
- Evaluation frameworks, though important, were not included in the study. However, they can be used to evaluate and determine implementation success which is key for resource-limited countries.

One would like to know if a programme or guidelines implementation would succeed even before it is started. It is, therefore, essential to search for relevant theories, models and frameworks that will be applicable to the aspects of this research, in order to increase understanding. Therefore, aspects of this research such as treatment guidelines, implementation tools used and implementation sites and agents will be discussed in the light of existing relevant theories, models and frameworks.

2.5 Selected theories and frameworks for evaluation of the implementation of HIV/AIDS treatment guidelines

A careful selection of theories and frameworks, which apply to the implementation of treatment guidelines, and the setting in which they are implemented has to be made. The selected theories have to address among others, factors that influence the implementation of treatment guidelines in various settings. This study covers different settings levels, namely the policy level (HIV/AIDS programme), the supervisory level (DHMT) and the practice level (PHC facilities). Therefore, theories, models and frameworks must be able to address implementation at different levels with differing roles and determine and measure implementation success at each level and across levels. It is expected that the theories and frameworks (Section 2.4) which are selected will deal with issues addressed in this study – implementation processes, implementation drivers and implementation barriers. The following theories (Table 2-6) are evaluated, reviewed and discussed as they may have a role to play in the implementation of treatment guidelines. Table 2-4 shows a summary of elements in the empirical study and related theories and frameworks.

Table 2-4: A summary of elements in the empirical study and association with related theories and frameworks

Element	Category	Framework/theory
Levels		
Policy - HIV/AIDS programme	Doctors Nurses Pharmacists	Communication theory (Manojlovich *et al*., 2015)
Supervisory - DHMT	Doctors Nurses Pharmacists	Communication theory (Manojlovich *et al*., 2015)
Practice - OPD /PHC clinics	Doctors Nurses Pharmacists	Communication theory (Manojlovich *et al.,* 2015) and the NPT (McEvoy *et al.,*2014)
Implementation tools		
Implementation process	Planning Engaging Executing Reflecting Evaluating	The NPT (de Brun *et al*., 2016:346) and the CFIR (Damschroder *et al*., 2013:10)
Implementation drivers	Competency Leadership Organisation	National Implementation Research Network (NIRN) (Fixsen *et al*., 2005); Theory of Change (Bertram *et al*., 2014; Bertram *et al*., 2015) and Theory Base (Henggeler *et al*., 2009:1)
Implementation barriers	Resource barriers System barriers Attitudinal barriers Patient barriers	TDF; the CFIR (Damschroder *et al*., 2009), The Exploration, Preparation, Implementation, and Sustainment framework (Aarons *et al*., 2011) and Determinants of Practice (Flottorp *et al*., 2013).
PARiHS	Evidence Context Facilitation	PARiHS (Kitson *et al*., 1998:150; Rycroft-Malone *et al*., 2002:174; Stetler *et al*., 2011)

2.5.1 Theories and frameworks addressing the implementation of treatment guidelines in different settings

There are a number of theories of individual or group behaviour that can be applied in order to understand implementation problems. The impact has to be pre-determined in order to be seen and measured and this can happen through the use of theories, frameworks and models.

2.5.1.1 The Normalisation Process Theory

The NPT is one of the theories which provide a set of sociological tools to understand and explain the social processes in which new or modified practices of thinking, enacting and organising work are operationalised in a healthcare setting (May *et al.*, 2009:29). According to May *et al.* (2009:29), the NPT is concerned with three key problems:

- implementation which is the process of bringing a practice or practices into action by means of social organisation;
- embedding which is the process of routinely incorporating a practice or practices into the everyday work of individuals or groups; and
- integration which is the process of reproducing and sustaining a practice or practices among social matrices of the organisations.

Treatment guidelines should become part of everyday practice, and the practice should be similar among various health facilities.

According to de Brún *et al.* (2016:346), the NPT has four components: coherence (making sense), cognitive participation (engagement), collective action (enactment) and reflexive monitoring (appraisal). Each of these components has sub-components that can be used by researchers (de Brún *et al*., 2016:346; May *et al.*, 2014:299; May & Finch, 2009):

- Coherence has differentiation and individual specification as its sub-components.
- Cognitive participation has enrolment, initiation and activation as its sub-components.
- Collective action has interactive workability, skills set workability as its sub-components.
- Reflexive monitoring has systematisation and individual or communal appraisal as its sub-components.

De Brún *et al*. (2016:346) state it is well recognised that there is a translational gap between the development of new treatments and their implementation into practice with the intended user. The success of guidelines is often limited when they are applied in a PHC setting because of the disease orientation and lack of focus on patients' and communities' needs (de Brún *et al*., 2016:346). McEvoy *et al*. (2014) encourage

researchers to consider using the NPT for multiple stakeholders so that analysis of implementation can come from many different perspectives. For this empirical study, each level involved in this research has a unique responsibility. Healthcare professionals at these levels are pharmacists, nurses and doctors. These professionals have different professional skills and competencies and they work at different levels such as policy, supervision and clinical care. They also have different responsibilities. HIV/AIDS treatment guidelines can have a great impact on the PHC or clinical care level.

2.5.1.2 Communication theory

For this study treatment guidelines have different meanings and roles in different healthcare disciplines. For example, treatment guidelines direct prescribers, who are doctors and prescribing nurses, but they also guide dispensing and managing the medicine supply chain for pharmacists. There is communication between prescribers and dispensers. Communication is applied between different levels of healthcare systems, as applied in this study, such as policy, supervisory and clinical practice or PHC facilities. For the 2016 HIV/AIDS treatment guidelines to be successfully implemented, communication is used between different levels and has to consider multidisciplinary differences.

Niazkhani *et al.* (2008:321) describe communication as a process of developing a shared understanding which emerges by establishing, testing and maintaining relationships between communicators. Pirnejad *et al*. (2008:336) show that there are two communication paradigms: communication as a transactional process responsible for information exchange and communication as a transformational process responsible for causing change.

Thomas *et al*. (2014:37) observe that groups of individuals through their interaction create a social reality which is an on-going, dynamic process with individuals acting in their interpretation of the perceived social reality. According to Thomas *et al.* (2014:37) social context is incorporated into knowledge building, and the groups' attention is on the knowledge that is jointly created. Berger and Luckmann (1966) state that human activity in any group tends to fall into patterns and routines which form a reality in everyday life. Therefore, patterns and routines contribute to the creation of social phenomena which are then institutionalised so that negotiated order emerges – one to which all group members subscribe, either explicitly or implicitly, forming a culture for that group (Thomas *et al*., 2014:37).

Pirnejad *et al.* (2008:336) view communication as a process of developing shared understanding, and putting the focus of communication more on the outcome (the action) rather than on the content of the message itself. Manojlovich *et al.* (2015) state that all communication processes share a link between communication and action. Therefore, communication theory is important for communication within groups of similar disciplines and also within a group of different professionals manning a specific healthcare facility.

In summary, treatment guidelines are implemented, embedded and integrated into clinical practice. The NPT addresses and evaluates implementation processes at a particular setting and highlights the implementation of treatment guidelines at the PHC level. Communication theory outlines communication and links it with actions. Communication is perceived as a transactional process responsible for information exchange and a transformational process responsible for causing change. If treatment guidelines are implemented, embedded and integrated into practice, a change in practice – facilitated by communication – will occur.

2.5.2 Theories and frameworks addressing implementation tools used

This section will explore the implementation tools used in the empirical study: implementation processes, implementation barriers and implementation drivers. These tools were found to be relevant in the assessment of treatment guidelines in a resource-limited country. Firstly, implementation processes cover planning, engaging, executing, reflecting and evaluation (Damschroder *et al*., 2006:50). Secondly, implementation drivers cover competency drivers, leadership drivers and organisation drivers (Bertram *et al*., 2014). Lastly, implementation barriers cover personnel factors, knowledge and competency factors, resource factors and system-related factors (Gravel *et al.,* 2006:16; Taba *et al.,* 2012:455).

The researcher believes that the results of this study will lead to new information about how best to implement treatment guidelines in a resource-limited setting. This section directly addresses the first three objectives of the study. It is also the foundation of the fourth objective that will be addressed later in Chapter 4. This section will also attempt to answer the research question: How can the implementation of HIV/AIDS treatment guidelines be improved?

2.5.2.1 Implementation processes

As mentioned above, it is important to have a broad understanding of implementation processes as they were used to develop tools to assess the implementation of treatment guidelines in Lesotho. Implementation processes refer to the social processes through which intervention is put into place in an organisation or community (May *et al*., 2009; Pfadenhauer *et al*., 2017). Implementation processes also contain the procedures and approaches that can be used by change leaders (Metz & Bartley, 2012:11; Packard, 2013). Damschroder *et al*. (2013:10) specify five main activities of implementation processes, as carried out by organisational change models: planning, engaging, executing, reflecting and evaluating. There are several frameworks that address these processes. However, the consolidated framework of implementation research (CFIR) was assessed and found to be relevant for this study and, therefore, will be broadly discussed.

The study of Damschroder *et al*. (2013:10) measured and rated constructs and confirmed that planning strongly distinguished between high and low implementation effectiveness. Reflecting and evaluating as constructs showed similar results (Damschroder *et al*. 2013:10). Engaging was also assessed and it was found out that a formally appointed internal implementation leader has a positive influence on the organisation (Damschroder *et al*. 2013:10).

The CFIR is meta-theoretical – it includes constructs from a synthesis of existing theories (Damschroder *et al*. 2013:10). The CFIR offers an overarching typology – a list of constructs to promote theory development and verify what works and why – across multiple contexts (Damschroder *et al*. 2009:50). It consists of five main domains: intervention, inner setting, outer setting, individuals' involvement and the process of implementation (Damschroder *et al*. 2009:50). Interventions have core components and have to be easily adaptable to a setting. They are multi-faceted and complex with many interacting components. The outer setting is associated with the economic, social and political context of the organisation (Damschroder & Lowery 2013). The inner setting is associated with the structural, cultural and political context affecting the process of implementation. Individuals' involvement leads to choices made, and exercise of power and influence on others (Damschroder & Lowery, 2013). This can produce predictable and unpredictable consequences of implementation Damschroder *et al*., 2009:50).

2.5.2.1.1 Planning

Planning is the degree to which tasks for implementing an intervention are developed in advance (Damschroder *et al.,* 2009:10). Financial costs and public health human resource allocation are normally included in the planning documents (Valaitis *et al.,* 2016). Mendel *et al*. (2008:21) state that the main objective of planning is to design a course of action to promote effective implementation. This is done by building local capacity in order to use interventions collectively or individually. Grol *et al.* (2007:93) state that in order to promote change in an organisation, the specific steps in plans are used based on theories or models. The content of the plan depends on the theory or model used to guide implementation. Some plans are formal and others are informal, and some are modifiable and non-modifiable. Some are workarounds – for non-modifiable contextual factors – and the strategies are designed for modifiable contextual factors (Damschroder *et al*., 2009:50).

2.5.2.1.2 Engaging

Engaging employs implementation leaders or champions. Damschroder *et al*. (2009:50) describe four types of implementation leaders: opinion leaders, formally appointed internal implementation leaders, champions and external change agents. Champions are individuals who are dedicated to support, market and drive implementation; they deal with indifference and resistance provoked by the intervention in an organisation. External change agents are individuals who formally influence or facilitate intervention decisions in a desirable direction – they are normally affiliated to an outside entity (Greenhalgh *et al*. 2004:424; Maidique, 1980:59). If new programmes and guidelines are implemented, then suitable leadership strategies have to be used (RNAO, 2012:56).

Aarons *et al.* (2014) emphasise that effective implementation leaders should be proactive, knowledgeable, supportive and perseverant in the implementation process. They plan, supervise and provide resources to support the implementation of change (Battilana *et al*., 2010). Weiner (2009:67) iterates that readiness for change is created and facilitated by leaders. They have to ensure innovation-value fit and develop plans, practices, structure and strategies that are intended to support implementation. Kyratsis *et al*. (2012) suggest that managers ought to make implementation decisions that are research-informed, through the interpretation of research evidence, and apply this to an organisational context. The relationship between leadership and the implementation outcome is determined by what leaders do and how they do these actions. (Mosson *et al*.,

2018). However, according to Docherty *et al*. (2017), it is hard for clinicians to master leadership roles in policy-making and planning – this is due to lack of training and experience.

2.5.2.1.3 Executing

Executing is the actual carrying out of implementation according to plan (Damschroder *et al*., 2009:50). The quality of execution includes planning the course of action to take, completing tasks on time, and engaging the main characters in the implementation process (Carroll *et al*., 2007; Pearson *et al*., 2005:978).

2.5.2.1.4 Reflecting and evaluating

Reflecting and evaluating refer to qualitative and quantitative feedback about the progress and quality of implementation (Damschroder *et al*., 2009:50). This is accompanied by regular personal and team debriefing about the progress and experience. Pfadenhauer *et al*. (2017:21) state that evaluation and reflection occur late in the implementation process and are of the opinion that it should start from the beginning. Evaluation includes traditional forms of feedback such as reports, graphs, qualitative feedback and anecdotal stories of success (Damschroder *et al*., 2009:50). Dedicating time to reflect and debrief before, during and after implementation promotes shared learning and improvements along the way (Brach *et al*., 2008; Edmondson *et al*., 2001:685).

Kirk *et al*. (2016:72) state that 53.8% of studies analysed, used CFIR in order to guide data analysis. Selection criteria used for selecting CFIR constructs has to be reported in order to improve implementation (Kirk *et al.,* 2016:72). For this study, implementation processes were used and questions were built using planning, engaging, executing, evaluation and reflecting, though reasons for this selection were not specified. Most studies used CFIR during and post-implementation to identify barriers to and facilitators of innovation implementation (Kirk *et al*., 2016:72). The empirical research outcome of this study will result in more information about the use of implementation processes in resource-limited settings for the future implementation of HIV/AIDS treatment guidelines and other guidelines, such as STG. The use of CFIR prospectively will provide an opportunity to redesign and increase the likelihood of successful dissemination and implementation (Kirk *et al*., 2016:72).

2.5.2.2 Implementation drivers

Implementation drivers were used to develop research tools for assessing the implementation of 2016 HIV/AIDS treatment guidelines for this study. Questions were developed to assess competency drivers, leadership drivers and organisation drivers. However, in order to understand these implementation drivers, it is important to look at the framework, models and theories associated. According to Bertram *et al*. (2015), frameworks to be considered are intervention components, implementation stages and implementation drivers. A brief overview of these frameworks will assist in understanding implementation drivers better.

2.5.2.2.1 Intervention components

Intervention components identified in the NIRN 2005 monograph offer a solid foundation for the exploration, purposeful selection, clarification, improvement and systematic implementation of a programme model. Bertram *et al*. (2015), state that intervention components include:

- A model definition specifying who should be engaged and how and in which activities and phases of service delivery.
- Theory bases supporting those elements and activities.
- The practice model's theory of change indicating how those elements and activities create improved outcomes for the target population.
- Target population characteristics showing behavioural, contextual, cultural, socioeconomic and other factors that suggest a good match with the practice model.
- Alternative models which indicate a rationale for why the programme, therefore, rejects using another practice model.

2.5.2.2.2 Implementation stages

Implementation stages comprise exploration, installation and initial and full implementation. It is stated that implementation is not an event, but a process of carefully considered organisational adjustments that unfold over the course of two to four years (Bertram *et al*., 2011; Fixsen *et al*., 2009). When innovations are considered for implementation, the service organisation must readdress exploration, installation, initial

implementation stage and full implementation stage. It is important to remember that at any point, significant changes in socioeconomic conditions, funding, leadership, staff turnover or other events may require the organisation to readdress activities of earlier stages of implementation (Bertram *et al*., 2015:477).

2.5.2.2.2.1 Exploration

Exploration is an initial stage of implementation (Avgar *et al.,* 2012:488; Meyers *et al*., 2012:462), whereby the organisation reflects on the potential match between the target population characteristics, organisation and community resources, and the programme model's key elements, activities, phases (model definition), theory bases and theory of change (Bertram *et al*., 2015:477). In this stage, organisation and system changes are needed to support the implemented programme to enhance population outcomes (Bertram *et al*., 2015:477). In this stage proactive, small adjustments produce great benefits. Future challenges to instal changes are predicted by adoption or adaptation of a programme model (Bertram *et al*., 2011).

2.5.2.2.2.2 Installation

Installation has key tasks or activities that define the installation stage. Resources are consumed to initiate the new or refined practice model (Bertram *et al*., 2014). A framework of core implementation components requires methodical examination and adjustment (Fixsen *et al*., 2005). In the installation stage, it is important to establish the competency and organisational drivers and other systems partners. Installation systematically addresses each implementation driver (Fixsen *et al*., 2009). Thus, model-pertinent criteria should define staff selection, training, coaching, data system and fidelity. Explicit cross-systems protocols need to be created by administrators through purposeful systems-level intervention in order to enhance effective programme implementation (Bertram *et al*., 2015:477).

2.5.2.2.2.3 Initial implementation

Initial implementation of any programme requires new understanding and activities (Damschroder *et al.,* 2009; Packard, 2013). Human inertia, fear of change and investment meets the excitement and anticipation of new ways of providing service under the status quo (Bertram *et al*., 2015:477). There is a mixture of high expectations, challenges and frustrations. In this stage, new programmes survive and thrive if the individuals using them

learn from mistakes and address challenges that emerge systematically. (Bertram *et al*., 2011). At this stage, the education of healthcare professionals and dissemination of information, pilot-test and adoption of interventions must take place (Palmer & Kramlich, 2011:29; Pfadenhauer *et al.,* 2017:16). Bertram *et al*. (2014) state that changes in organisational structures, culture, capacity and competencies lead to successful programme implementation. During the stage of initial implementation, unexpected constraining factors may arise. Similarly, uncertainty about changes in roles, responsibilities, and practices should be expected (Bertram *et al*., 2014).

2.5.2.2.2.4 Full implementation

Full implementation occurs when most professionals are routinely providing the new or refined programme model with fidelity (Bertram *et al*., 2011). They are, therefore, more likely to achieve population outcomes that approximate those achieved through research or similar efforts at other service settings (Bertram *et al*., 2011). When model-pertinent implementation drivers are established, tested and adjusted during installation and initial implementation stages, full implementation – that achieves improved population outcomes with fidelity in a sustainable manner – is more likely to occur (Bertram *et al*., 2011). Full implementation means that implementation drivers are fully installed and easily accessible, are functioning to support fidelity and are regularly reviewed with an eye on improvement. The time required to pass through the awkward stage of initial implementation to full implementation will vary from setting to setting and practice to practice (Bertram *et al*., 2011).

2.5.2.2.3 Implementation drivers

Implementation drivers are needed to build the capacity to create practice, programme and systems-level changes so that an improved population outcome may be reached (Bertram *et al*., 2011). These are the infrastructure elements required for effective implementation that supports high fidelity, effective and sustainable programmes (Bertram *et al*., 2011; Blasé *et al*., 2012).

Figure 2-1: Implementation drivers as adapted from Bertram *et al*. (2011)

Figure 2-1 shows competency drivers which include selection, coaching, training and performance assessment. Organisation drivers include system-level intervention, facilitative administration and decision-support data systems. Leadership drivers are technical and adaptive. Figure 2-1 depicts that the implementation drivers are integrated and compensatory. If all the implementation drivers are in place, consistent programme implementation will be achieved leading to improved outcomes (Bertram *et al*., 2011).

Implementation drivers are divided into three categories, namely competency (Farnham & Stevens, 2000:374), organisation (Fixsen *et al.*, 2005) and leadership (Damschroder *et al.*, 2013:10; Stetler *et al.*, 2011:17).

2.5.2.2.3.1 Competency drivers

Competency drivers are mechanisms to develop, improve and sustain one's ability to implement an intervention as intended to benefit beneficiaries (Damschroder *et al.*, 2009:9; Farnham & Stevens, 2000:347). Competency drivers include selection, training, coaching and performance assessment (Fixsen *et al.*, 2005). The competencies of

personnel could be one of the factors that affect the implementation of treatment guidelines in Lesotho. Healthcare professionals that are expected to implement changes in HIV/AIDS treatment guidelines have to be appropriately selected. They must have received adequate and appropriate training. Their performance with regard to implementation of HIV/AIDS treatment guidelines must be assessed accordingly.

2.5.2.2.3.2 Leadership drivers

Leadership drivers focus on providing the right leadership strategies for the various leadership challenges that occur when implementing new programmes and guidelines (Damschroder *et al.*, 2009:9; RNAO, 2012:56). Leadership drivers are divided into technical and adaptive leadership. An adaptive leadership style is needed at the beginning of change, and technical leadership is needed to manage the continuing implementation for an effective programme over a long period of time (Damschroder *et al.*, 2009:9; Fixsen *et al.*, 2013:23; RNAO, 2012:56). Leadership drivers play an important role in implementation of HIV/AIDS treatment guidelines and the absence of committed leadership may adversely affect the impact expected.

Other researchers have a slightly different approach to leadership and its influence on implementation. The terminology used is different – instead of technical and adaptive leadership, they use transformational and transactional leadership; these can be active or passive (Aarons *et al.,* 2012). The organisation theory of innovation implementation states that leaders play an important role in creating readiness for change and developing plans, practices, structures and strategies to support implementation (Weiner, 2009:67). Similarly, Battilana *et al*. (2010) specify that managerial tasks, such as planning, supervising change and providing resources, are crucial to support the implementation of change. Aarons *et al*. (2014) propose that, in the implementation process, effective leadership of EBP should be proactive, knowledgeable, supportive and perseverant. Aarons *et al.* (2012) emphasise the importance of leadership in sourcing funding, disbursing funds and enforcing policies in support of implementation.

In order to promote high fidelity and improved population outcomes, implementation drivers must be purposefully integrated – this will restructure the organisational culture and climate (Bertram *et al*., 2014; Fixsen *et al*., 2009). Implementation drivers are compensatory because weakness in one driver can be mitigated by strengths in others. For example, if model-pertinent training is underfunded or temporarily unavailable, model-pertinent, data-informed coaching may compensate to build staff competence and

confidence (Bertram *et al*., 2014). Many of the components of each of these drivers may currently exist in organisations and systems, and they must be consciously, and with fidelity, repurposed and incorporated to promote effective implementation of the organisation's service model (Bertram *et al*., 2014).

2.5.2.2.3.3 Organisation drivers

Organisation drivers are mechanisms used to create and sustain hospitable organisational and system environments for effective service (RNAO, 2012:58-59). The administrative support provides leadership (Damschroder *et al.*, 2009:9; Fixsen *et al*., 2013:19; RNAO, 2012:59). Systems intervention ensures that there are enough financial and human resources to make implementation possible (Damschroder *et al.*, 2009:10, Fixsen *et al.*, 2013:21). The decision-support data systems are sources of information used to help healthcare professionals make informed decisions internal to an organisation (Damschroder *et al.*, 2009:10, RNAO, 2012:58). When financial resources are limited, the quality of human resources and decision-support data systems is limited. As a result, the implementation of treatment guidelines will be adversely affected. Therefore, enough financial resources may go a long way to facilitate implementation through the acquisition of appropriate human resources and decision-support data systems.

2.5.2.3 Implementation barriers

In any implementation process, there are barriers and enablers or facilitators (Nilsen, 2015). While the barriers need to be addressed, enablers also need to be identified and nurtured in order to lead to successful implementation, which leads to improved treatment outcomes (Damschroder *et al*., 2009:50; RNAO, 2012:56; Taba *et al*., 2012:455). McGinn *et al*. (2011) show that one needs to understand facilitators, which contributes to successful implementation. Damschroder *et al.* (2009:50) state that patient barriers and facilitators have to be taken into consideration when aiming to bring changes to treatment guidelines – this will improve patient care and treatment. Taba *et al.* (2012:455) identified that barriers to guideline implementation consist of resource barriers, system barriers, attitudinal barriers and patient barriers. This study categorised barriers as personnel factors, knowledge and competency factors of health professionals, resource-related factors, financial factors and system factors. Attitudinal and patient barriers were not part of the study. Table 2-5 shows implementation barriers assessed in the current study.

Table 2-5: Implementation barriers

Implementation barriers
Personnel factors
Lack of nurses and medical practitioners in hospitals
Lack of nurses and medical practitioners in PHC clinics
Lack of pharmacy personnel at hospitals
Lack of pharmacy personnel at PHC clinics
Lack of shared planning at the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines
Reluctance of healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines
Fear of change to daily responsibilities
Knowledge and competency factors of healthcare professionals
Insufficient education and training
Insufficient clinical knowledge and skills
Inadequate communication skills
Poor time management
Insufficient organisational skills
Insufficient management skills
Unaccustomed to document outcomes of HIV/AIDS treatment guidelines
Resource-related factors
Lack of integrated health information systems for storing and retrieving data
Lack of time
Lack of technology (such as computers)
No or unreliable internet access
No or unreliable email services
Lack of funds to acquire highly technologic health information systems
Lack of drug information systems
Lack of relevant and current reference books
Lack of support by non-government organisations
Lack of well-designed implementation research to support decisions
Financial factors
Lack of budget for new HIV/AIDS treatment guidelines implementation
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation
Lack of budget for new posts for healthcare personnel
System-related factors

Implementation barriers
Fragmentation of the healthcare system
Lack of good practice standards
Lack of task agreements and performance evaluation criteria
Poor co-ordination of activities by the managers
Shortage of mentors and role models to encourage health professionals to be innovative
Management-related problems
Lack of suitable drugs (ARV regimens included) in the country
Lack of skills in medicine chain supply management

Resource: Gravel *et al*., 2006:16; Taba *et al*., 2012:455).

Resource barriers, for example, lack of time, financial and human resources, lead to poor implementation of treatment guidelines (Gravel *et al*., 2006:16; Taba *et al*., 2012:455). Lack of time to search for information was identified by OPD as a barrier for Estonian healthcare professionals (Taba *et al*., 2012:455).

System barriers may include the availability of treatment guidelines which are too complicated to understand; therefore, healthcare professionals may not want to use them. Healthcare professionals may be willing to use guidelines, but they may not have access to them, or it is too difficult to find relevant information in the available guidelines (Taba *et al*., 2012:455). This is relevant for the PHC level, where healthcare professionals may have copies of treatment guidelines, but because they lack understanding, they are unable to use them, or they may not have enough copies for all the healthcare professionals. Taba *et al*. (2012:455) state that physicians prefer electronic guidelines that can easily be used. However, in a resource-limited setting this could be a barrier because such devices may not be available.

Attitudinal barriers may be shown in the way that professionals behave towards the implementation of treatment guidelines. Treatment guidelines may reduce a doctor's autonomy as they limit his/her options and treatment routines that already exist; they also limit flexibility and individualised treatment. Differences in the level of education may also affect the attitude of healthcare professionals towards the use of treatment guidelines (Gravel *et al*., 2006:16; Taba *et al*., 2012:455). According to Taba *et al*. (2012:455), 47% of healthcare professionals somewhat disagree that treatment guidelines reduce doctors' autonomy.

Patient barriers can affect patients in that the patients may not have resources to afford the medicine that forms part of treatment guidelines, and the provider may have to finance those medicines (Damschroder *et al*., 2009:50; Gravel *et al*., 2006:16). Due to the scope of this research, patient barriers will not be discussed, even though they are important aspects of treatment guidelines implementation. According to Taba *et al*. (2012:455), 62% of physicians strongly disagree that patients do not want doctors to conform to treatment guidelines.

It is also important to view frameworks, theories and models that address implementation barriers. Powell *et al*. (2017a) mention that implementation barriers are summarised in a range of conceptual models and frameworks, including the TDF (Tabak *et al*., 2012:337), the CFIR (Damschroder *et al*., 2009), the Exploration, Preparation, Implementation and Sustainment framework (Aarons *et al*., 2011) and the Checklist for Identifying Determinants of Practice (Flottorp *et al*., 2013).

Barriers can be related to implementation processes and implementation drivers. Gravel *et al.* (2006:16) developed a taxonomy for barriers and facilitators which can be used to identify barriers to implementation. The taxonomy of barriers and facilitators covers a wide range of issues including knowledge, attitudes and behaviour (Gravel *et al.,* 2006:16). Knowledge consists of a lack of awareness, a lack of familiarity and forgetting. Attitudes consist of a lack of agreement with one component or a lack of agreement in general. Behaviour consists of factors associated with patients, decision-making or the environment (Gravel *et al.,* 2006:16). The five most commonly mentioned barriers are:

- Time constraints (Taba *et al.,* 2012:455).
- A lack of applicability due to patients' characteristics (Graham *et al*., 2004:1).
- A lack of applicability due to the clinical situation (Davis *et al*., 2003:198).
- Perceived patient preference for a model of decision-making that did not fit a shared decision-making model (Gravel *et al.,* 2006:16).
- Not agreeing with asking patients about their preferred role in decision-making (Gravel *et al.,* 2006:16).

The facilitators identified include motivation of healthcare professionals, the perception of patient outcome expectancy and process expectancy (Gravel *et al.*, 2006:16).

2.5.2.4 The PARiHS framework

The PARiHS framework was developed by Kitson *et al.* (1998) as a means to measure the failure or success of implementation projects. Kitson *et al*. (2008:1) later proposed that the framework is also useful to guide designs for implementation interventions. The PARiHS is a framework that consists of three components, namely evidence, context and facilitation (Kitson *et al*., 1998:150; Rycroft-Malone *et al*., 2002:174; Stetler *et al*., 2011:13). According to this framework, the successful implementation of research into practice is a function of the interplay of three core elements namely: a) the level and nature of the evidence that can be used, b) the context or environment in which the research can be placed and c) the method by which the research implementation process can be facilitated (Kitson *et al.*, 1998:150; Stetler *et al.*, 2011; Sudsawad, 2007:10). It is noted that the three core elements have equal importance in determining the success of the research use. This means that each of the core elements is situated on a low-to-high continuum, and the framework envisages that the most successful implementation occurs when all core elements are on the high end of the continuum (Kitson *et al.*, 1998:150; Stetler *et al.*, 2011; Sudsawad, 2007:10,).

2.5.2.4.1 Evidence

It is stated that evidence may come from either systematic reviews of randomised clinical trials (RCT), or anecdotal and descriptive information – the former is considered “high” and the latter “low” continuum (Kitson *et al.*, 1998:150; Rycroft-Malone *et al.*, 2002:175). It is argued that while RCT provides information about effectiveness, it does not provide information for other clinical problems which may require information from qualitative research (Kitson *et al.*, 1998:150; Rycroft-Malone *et al.*, 2002:175). The authors also mention that there should be a partnership between the clinician and the patient in decision-making about patient preferences – continuum for evidence is “high” if the patient is considered and “low” if the patient is not considered (Kitson *et al.*, 1998:150; Rycroft-Malone *et al.*, 2002:175). Sources of evidence may also be research, clinical experience and the patients themselves (Rycroft-Malone *et al.*, 2002:175). For evidence to be credible, it should have been critically appraised before it was considered for implementation (Rycroft-Malone *et al.*, 2002:175). The evidence used mainly for HIV/AIDS treatment guidelines comes from the WHO research, which is based on high-quality research. However, local information may provide evidence that can be more applicable in a local setting (Harrison *et al*., 2013:49). Conversely, the absence of evidence

emanating from a local setting may affect the implementation of HIV/AIDS treatment guidelines in a local setting.

2.5.2.4.2 Context

According to Stetler *et al.* (2011:13), context is the environment or setting in which a proposed change is implemented. It is receptive if it meets cultural, leadership and societal expectations. It also includes the physical environment in which the practice takes place, characteristics that are beneficial to research use such as operational boundaries, decision-making processes, patterns of power and authority, resources, organisational culture and evaluation for the purpose of monitoring and feedback (Sudsawad, 2007:10). The setting or organisation has to value contributions of individuals, and it has to have a shared vision and decentralised decision-making. Moreover, an organisation that has effective leadership has clear roles, effective teamwork and organisational structures (Kitson *et al.*, 1998:151; Rycroft-Malone *et al.*, 2002:176; Stetler *et al.*, 2011:17). Kitson *et al.* (2008) clarify that there are contexts that are more favourable to the implementation of evidence, and usually comprise those that have transformational leaders and strong feedback and evaluative mechanisms. Pfadenhauer *et al.* (2017:21) add ethical, legal and political context as important aspects.

2.5.2.4.3 Facilitation

Facilitation is a technique by which someone makes things easier for others, in this case, to accept change, which is carried out by appropriate external and internal facilitators (Rycroft-Malone *et al.*, 2002:174; Stetler *et al.*, 2011:13). The sub-elements of facilitation are purpose, role, attributes and skills (Kitson *et al.,* 2008). The facilitator has an appointed role, internal or external, to help and enable; he/she may provide help to achieve a specific task. He/she possess skills and attributes suitable for a specific task required. The role of a facilitator has to be practical, administrative and supportive and is likely to be developmental, seeking to explore and release the inherent potential in individuals (Rycroft-Malone *et al.*, 2002:176; Stetler *et al.*, 2011:17). Conversely, the facilitation may be missing in terms of skills, attributes and follow up – this may, consequently, lead to a good concept failing to be implemented throughout all levels of care.

Use of PARiHS has been reported and, from the findings, Ullrich *et al*. (2014:30) state that evidence and context can be used to plan facilitation strategies and modify interventions according to a specific site. According to Ullrich *et al.* (2014:30) differences between

internal and external facilitators have been explained in order to predict how provider and patient experiences might impact findings and to analyse and organise data. This has led to an enhanced understanding of variation in success (Ullrich *et al.,* 2014:30). PARiHS could predict or explain barriers to implementation. The results also state that PARiHS was perceived to integrate well with other theories in a complementary sense. It may guide the development of a project and be supported by other theories (Ullrich *et al.,* 2014:30).

Additionally, PARiHS is viewed as sensible and easy to use and apply by interviewers. It can be also applied in different settings and at different stages of the project implementation (Ullrich *et al.,* 2014:30). Its strengths, however, can also be perceived as weaknesses: it is too broad and diffuse, it focuses on too many constructs and it lacks depth. Ullrich e*t al.* (2014:30) state the weakness of PARiHS being that it has no validated measurement tools. However, a PARiHS diagnostic grid is available and can be used in different settings (see Figure 2-2 below).

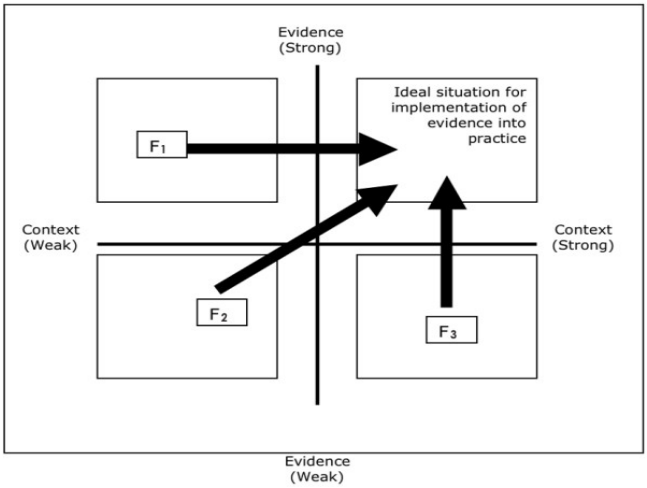

Figure 2-2: PARiHS diagnostic and evaluation grid as adapted from Kitson *et al*. (2008:1)

Figure 2-2 shows F1 as a facilitation method for transforming weak context and strong evidence into a highly receptive context. It also shows F2 as a facilitation method to manage a weak context and weak evidence situation – this is the most challenging method and involves issues of safety and basic competencies that need to be managed. Finally, F3 is a facilitation method used to manage a strong context and weak evidence situation – involving issues of routine and power.

Moore *et al*. (2009) state that factors that influence the use of research include research evidence integrated with existing knowledge and practices; organisational factors that support research use; relationships between researchers, decision-makers and practitioners to foster trust and mutual cooperation; and facilitation strategies matched to the readiness of individuals, team and context.

The facilitator's role is concerned with the assessment of the situation, individuals, teams and workplace readiness; development of change and evaluation of strategies; support of the implementation process and coaching and mentoring the teams through the change. Evidently, PARiHS as a framework is very useful. However, it has challenges when used to determine the success of implementation. Stetler *et al.* (2011:99) add that successful implementation is a function of evidence, context and facilitation. Ultimately, successful implementation is the desired outcome and is visualised as an explicit part of PARiHS. This is important because implementation can now be quantified and one can predict whether it will succeed or not.

This framework will go a long way in guiding the implementation of treatment guidelines in a resource-limited setting. This is because the three components – evidence, context and facilitation – that are essential for successful implementation can guide the implementation if they are recognised and used. Rycroft-Malone *et al.* (2002) state that successful implementation is most likely to happen when a) scientific evidence is regarded as aligning with professional and patient beliefs; b) healthcare context is receptive to implementation, including supportive leadership, culture and evaluation systems and c) mechanisms are in place to facilitate implementation.

In conclusion, evidence for HIV/AIDS treatment guidelines is generated by the WHO. Its context applies to the specific health system whose leadership can be trained to accommodate and guide the implementation of treatment guidelines. Facilitation can, eventually, be carried out by internal facilitators who are empowered by skilled external facilitators and through skills transfer. When further evaluating PARiHS in terms of levels of this study, it seems to address the implementation of treatment guidelines at each level however, does not address the interaction between different levels of care. Local HIV/AIDS treatment guidelines are adopted, printed and distributed by the AIDS programme and used by the PHC healthcare professionals for guidance and professional decision-making when prescribing, dispensing and ensuring the availability of specific ARVs. Therefore, an additional framework is needed to fill this gap.

2.5.3 Possible links or relationships between the CFIR, NIRN and PARiHS frameworks

It is essential to closely evaluate factors affecting the implementation of HIV/AIDS treatment guidelines. Franckie *et al*. (2008:38) show that factors influencing implementation include characteristics of the guidelines, implementation strategies, healthcare professionals, patients and the environment. Implementation strategies may include the use of educational materials, meetings, reminders and audit and feedback (Davis & Taylor-Vaisey, 1997:412; Grimshaw *et al*., 2006:s17). Powell *et al.* (2017a) include the consideration of implementation leadership and implementation climate as implementation strategies.

Possible links between implementation processes, implementation drivers, implementation barriers and PARiHS in literature have to be investigated and analysed in order to increase the understanding of implementation. Damschroder *et al*. (2013:10) show a link between PARiHS, implementation processes, implementation barriers and implementation drivers. These are the frameworks that have been used to formulate questionnaires for this research.

Even though initially, PARiHS was not considered as a framework, it has some relevant elements that appear in the study questionnaire: evidence used when reviewing guidelines and the dissemination of guidelines that train the facilitation of healthcare professionals. This framework can be used to measure successful implementation and can determine or predict implementation success even before implementation starts. Table 2-6 shows implementation tools, constructs and literature sources.

Table 2-6: Implementation tools, constructs and literature sources

Element	Sub elements	Framework/theory
Implementation tools		
PARiHS	Evidence Context Facilitation	PARiHS (Rycroft-Malone *et al.*, 2002:174; Stetler *et al.,* 2011:13; Kitson *et al.,* 1998:150)
Implementation process	Planning Engaging Executing Reflecting Evaluating	The NPT (de Brún *et al.,* 2016:346) and CFIR (Damschroder *et al*., 2013:10)

Implementation drivers	Competency Leadership Organisation	NIRN (Fixsen *et al.,* 2005); Theory of Change (Bertram *et al.,* 2014; Bertram *et al.,* 2015) and Theory Base (Henggeler *et al.,* 2009:1-30)
Implementation barriers	Resource barriers System barriers Attitudinal barriers Patient barriers	TDF and the CFIR (Damschroder *et al.*, 2009) The exploration, preparation, implementation and sustainment framework (Aarons *et al.,* 2011), and determinants of practice (Flottorp *et al*., 2013)

Source: Author's own construction

Looking at each element and sub-elements, it can be deduced that all frameworks have similar words which may mean the same thing but are at different hierarchy levels.

2.5.3.1 Leadership

Damschroder *et al*. (2009) show that effective leadership contributes to the success of implementation and can emerge from any level of the organisation. Damschroder *et al*. (2009:50) also show four types of leadership: opinion leaders, formally appointed internal implementation leaders, champions and external change agents. Fixsen *et al*. (2005) recognise leadership as a driver of implementation and describe two types of leadership: technical and adaptive leadership. Stetler *et al*. (2011:13) classify leadership under context in PARiHS. In PARiHS, leadership is part of an environment that provides conducive and suitable conditions for the implementation of guidelines (Stetler *et al.* 2011:99). The organisation that has effective leadership has clear roles, effective teamwork and organisational structures (Kitson *et al.*, 1998:151; Rycroft-Malone *et al.*, 2002:176, Stetler *et al.*, 2011:17). Grol and Grimshaw (2003:1226) recognise lack of leadership as a barrier to successful implementation.

2.5.3.2 Facilitation

Facilitation is one aspect that PARiHS stipulates with specific attributes. An enabling facilitator's role is more likely to be developmental, seeking to explore and release the inherent potential in individuals (Rycroft-Malone *et al.*, 2002:176, Stetler *et al.*, 2011:17). CFIR stipulates that champions should be selected in a thoughtful and careful manner but should be allowed to grow naturally as leaders (Damschroder *et al*., 2009:50). Damschroder *et al*. (2009:50) indicate that through engaging, champions should provide training, education and role modelling as a conducive environment for implementations.

The Bertram *et al.* (2014) state that there are facilitative administrators who are part of organisation drivers and that training and coaching can be viewed as similar to facilitation in PARiHS.

2.5.3.3 Planning and executing

Planning and executing form part of implementation processes. Evidence-based guidelines can be implemented through planning by using healthcare professionals who are selected and engaged to execute the plan (Damschroder *et al*., 2009:50). According to Bertram *et al.* (2014), there are two stages of implementation: an initial implementation stage and a full implementation stage. In the implementation of treatment guidelines, competent healthcare professionals who are selected, trained and coached should be used (Bertram *et al.,* 2014). Stetler *et al.* (2011:17), through PARiHS, sees facilitation as a concept that drives the implementation of EBP or guidelines; thereby, making it the most appropriate framework for this research.

2.5.3.4 Successful implementation

Implementation success has to be clearly defined, predicted and measured. Within the PARiHS framework, successful implementation is represented as a function of the nature and type of evidence, and the qualities of the context, and the way the process is facilitated in which evidence is being introduced (Kitson *et al.,* 2008:1). Kitson *et al.* (2008:1) state that contexts conducive to successful implementation include transformational leadership, features of learning organisations, appropriate monitoring, evaluation and feedback mechanisms. The PARiHS diagnostic and evaluation grid shows the type of facilitation support that would lead to the successful implementation of evidence, changes in behaviour and working patterns (Kitson *et al.,* 2008:1). Implementation drivers discuss performance assessment and fidelity under organisation drivers (Bertram *et al.,* 2011; Bertram *et al.,* 2014; Schoenwald *et al.,* 2004). Reflecting and evaluating are part of the CFIR, which includes qualitative and quantitative feedback related to implementation; this is how progress is measured (Damschroder *et al*., 2009:50).

It can be concluded that these frameworks (CFIR, PARiHS, and NIRN) address the same issues but with differing terminologies, constructs and emphasis. Implementation processes consist of planning, engaging, executing, and reflecting and evaluation (Damschroder *et al*. 2009). Implementation drivers include leadership drivers, competency drivers and organisation drivers (Fixsen *et al*. (2005), while PARiHS

comprises evidence, context, and facilitation (Kitson *et al.,* 2008). All these constructs are relevant and PARiHS specifies evidence provided when formulating guidelines, implementation processes provide guidance on how to implement them in terms of planning and reflecting and evaluating. Implementation drivers focus on leadership drivers who are in charge of implementation and who ensure there is a suitable environment that supports implementation. Empirical results of the study may contribute to implementation knowledge as aspects of each have been used to ask questions in a resource-limited country at three levels, namely policy (HIV/AIDS programme), supervisory (DHMT) and practice (PHC facilities).

2.6 Chapter summary

The literature review chapter was divided into four parts. The first part dealt with treatment guidelines and specified HIV/AIDS treatment guidelines. Importance of guidelines was outlined and summary of 2016 HIV/AIDS treatment guidelines was given. Reasons for reviewing treatment guidelines were discussed as HIV treatment strategies that lead to change of guidelines. The second part discussed factors affecting implementation, and other aspects of implementation such as stages of implementation, implementation strategies and implementation outcome and measurements. The third part outlined frameworks, models and theories related to implementation, and five categories were covered in detail and these are process models, determinant frameworks, classic theories, classic theories and evaluation frameworks. The fourth part dealt with frameworks that are relevant to this study namely Communication Theory and NPT. Finally theories and frameworks that are part of this research project were outlined in detail and these are related to the first three empirical research objectives of this study, and these are implementation processes, implementation drivers and implementation barriers. The last research objective was addressed in Chapter 4 which was based on both literature and empirical study findings.

Chapter 3 outlines the empirical results of the study covering the first three of the study as outlined in Chapter 1

.

CHAPTER 3 RESULTS AND DISCUSSION

3.1 Introduction

This chapter includes the results and discussion of the empirical study in order to address the following three objectives:

- To explore current HIV/AIDS treatment guideline implementation processes in Lesotho.
- To investigate how the implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.
- To identify barriers affecting HIV/AIDS treatment guideline implementation in Lesotho.

3.2 Results of the empirical study

The results of the empirical study include the demographic information, implementation processes, implementation barriers and implementation drivers. The following terms are used in the interpretation of the results.

- **HIV/AIDS programme** is a section in the disease control unit of the MOH of Lesotho that is responsible for all activities related to HIV/AIDS. In the context of this study the term HIV/AIDS programme will be used to refer to this unit.
- **DHMT** is a district supervisory level responsible for PHC facilities in a specific district.
- **PHC facilities** are primary healthcare clinics (including PHC facilities of CHAL as well as the MOH) situated in the different parts of the district that provide PHC service including HIV/AIDS services
- **Healthcare professional** refers to all clinically practising professionals employed at the HIV/AIDS programme, the DHMT, and the PHC facilities (Including PHC facilities of CHAL as well as the MOH).
- The **current position of a healthcare professional** refers to the position that healthcare professionals occupy, for example, PHC manager or healthcare professional.

- **Type of healthcare prof**essional refers to the administrative or clinical post a professional holds, besides being a nurse clinician, registered nurse or pharmacist.

- **Area of focus** refers to the PHC facilities according to the results of the study.

- **Professional's degree** refers to the qualification (degree) a nurse or pharmacist – who is also registered with a statutory council – holds.

- **Reports** refer to reports (generated from data collection by data clerks at the PHC facilities) written by healthcare professionals at PHC facilities that are sent to the DHMT which will in turn sent to the HIV/AIDS programmes .

- For the DHMT and PHC facilities number and percentages will be used to describe frequencies, for the HIV/AIDS programme results, only n will be used, because of the total number of healthcare professionals employed to oversee HIV/AIDS activities in the country was 5.

- **N –** denotes total number of healthcare professionals that answer a specific question.

- **n** – denotes a proportion of healthcare professionals who responded with the same answer to a specific question

3.3 Demographic information

This section covers the demographic information concerning the study population at the different levels of the study: the HIV/AIDS programme, the DHMT and the PHC facilities

3.3.1 Demographic information of healthcare professionals at the HIV/AIDS programme

Table 3-1 illustrates the demographic information related to healthcare professionals working at the HIV/AIDS programme.

Table 3-1: Demographic information of healthcare professionals at the HIV/AIDS programme

Demographic information	Description	Response (N=5)(*n*)
Current age group (years)	< 31	0
	≥ 31 and 36	0
	≥ 36 and < 44	1
	≥ 44	4
Gender	Male	0
	Female	5
Highest level of education (completed)	Master's degree	1
	Professional degree	4
Years of experience in the current position in the HIV/AIDS programme	2	2
	5	1
	7	1
	10	1
Healthcare profession	Medical doctor	1
	Nurse	4
Current position at the HIV/AIDS programme	Manager	1
	Clinical officer	4

The HIV/AIDS programme is managed by five healthcare professionals, one medical doctor holds a master's degree and acts as a manager, and four nurses who hold professional degrees and are called clinical officers. These healthcare professionals are mature in age (above 36 years in age groups). They have worked for a minimum of two years at the HIV/AIDS programme with one healthcare professional having 10 years' experience in the current position.

3.3.2 Demographic information of healthcare professionals at the DHMT

Demographic information for the healthcare professionals working at the DHMTs. Table 3-2 presents the demographic information of healthcare professionals at the DHMT.

Table 3-2: Demographic information of healthcare professionals at the DHMT

Demographic information	Description	Response (N=27) *n*(%)
Current position at the DHMT	Public health nurse	7(25.9)
	District nursing officer	6(22.2)
	Other nursing cadres	2(7.4)
	District pharmacist	8(29.6)
	Other. Specify: Logistic managers	4(14.8)
Years of experience in current areas of employment	> 10	12(44.4)
	11-20	12(44.4)
	21-30	3(11.1)
	< 30	0(0.0)
Current age group (years)	< 31	5(20.8)*
	≥ 31 and 36	10(41.7)
	≥ 36 and < 44	7(29.2)
	≥ 44	2(8.3)
Gender	Male	7(25.9)
	Female	20(74.1)
Highest level of education (completed)	Bachelor's degree	5(18.5)
	Diploma	3(11.1)
	Professional degree	19(70.4)

*Three healthcare professionals did not state their age

The healthcare professionals at the DHMT consist of public health nurses 7 (25.9%), district nursing officers 6 (22.2%), and other nursing officers 2 (7.4%), districts pharmacists 8 (29.6%) and logistics managers 4 (14.8) (who were also pharmacists). According to the results, there are 20 females (74.1) and 7 males (25.9%), and the majority of healthcare professionals who work at the DHMTs hold professional degrees 19 (70.4%); only a few hold a diploma 3 (11.1%). Most of the health professionals 24 (88.8%) have work experience of less than 20 years and about 3 (11.1%) of them have work experience of more than 20 years. Figure 3-1 presents the results of the number of healthcare professionals at the DHMT categorised by years of experience and age group.

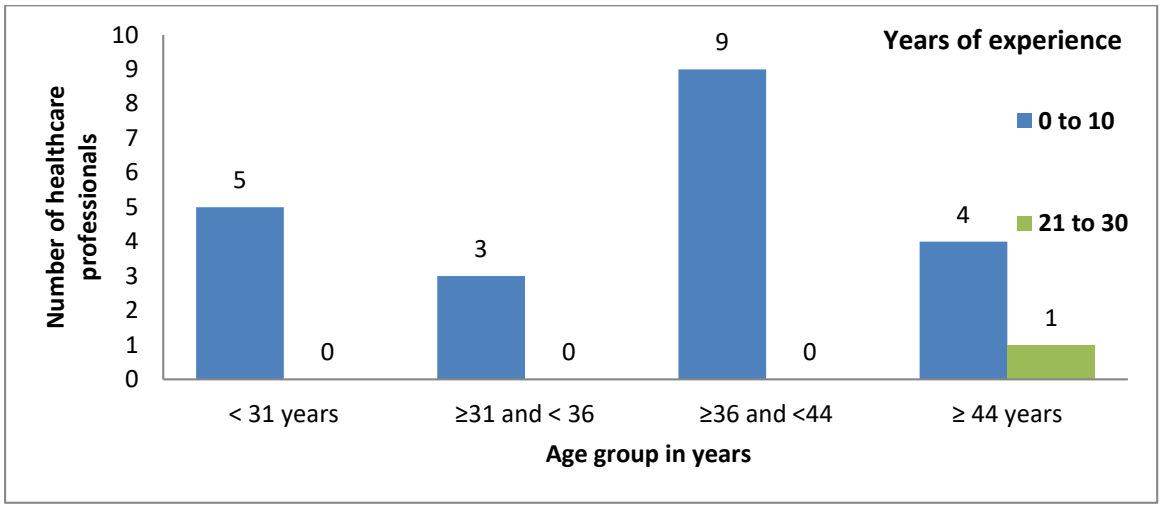

Figure 3-1: Number of healthcare professionals at the DHMT categorised by years of work experience and age group (N = 24)

The results in Figure 3-1 reveal that the majority of healthcare professionals (n=21, 87.5%) at the DHMT, in all age groups, have less than 10 years' work experience. One healthcare professional has 30 years of work experience. (From Table 3-1 and Table 3-2, three healthcare professionals did not provide their age). Figure 3-2 depicts the number of healthcare professionals at the DHMT categorised by qualification and personnel age group.

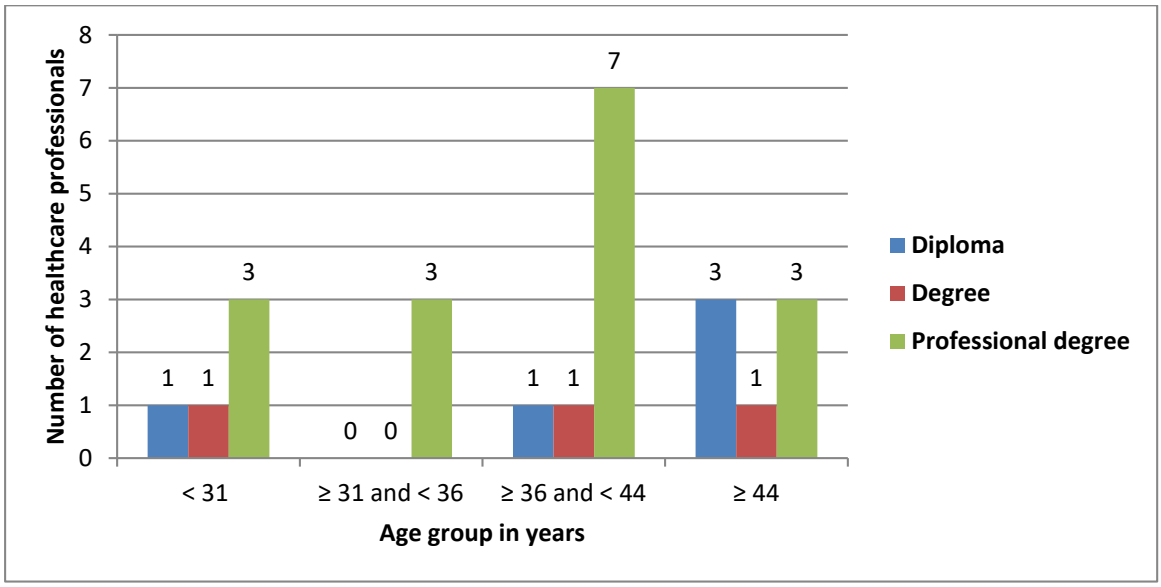

Figure 3-2: Number of healthcare professionals at the DHMT categorised by qualification and age group (N = 24)

Figure 3-2 displays that most healthcare professionals (n=16, 66.7%) at the DHMT hold professional degrees and, of those who hold a professional degree, 10 (41.7%) of them are older than 36 years of age.

Figure 3-3 demonstrates the number of healthcare professionals at the DHMT categorised by gender and age group.

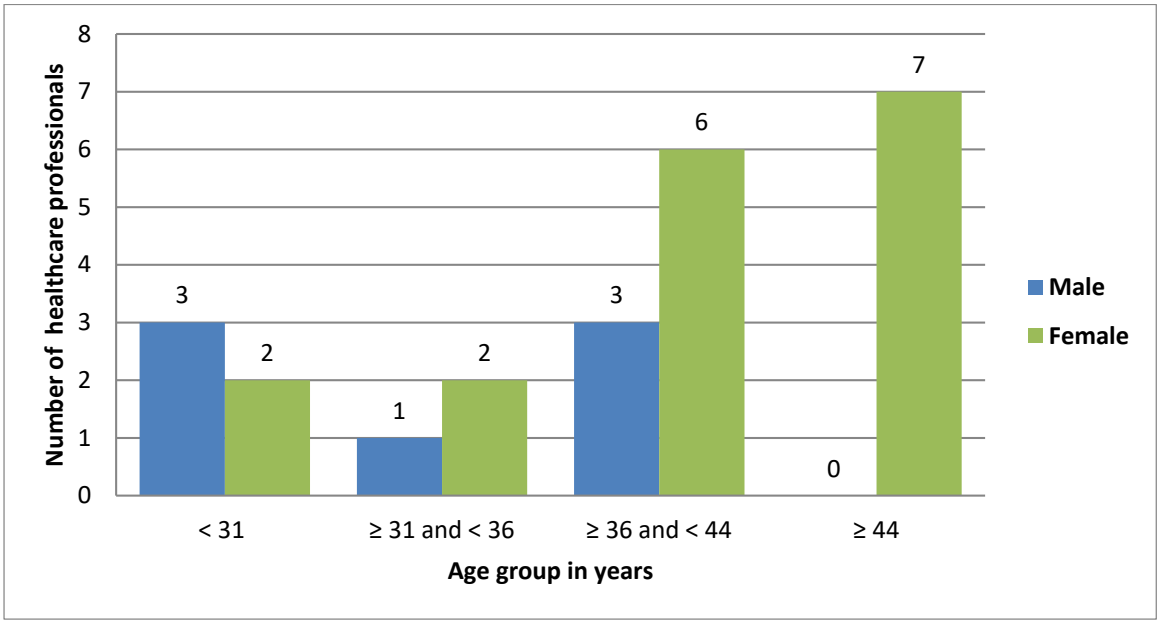

Figure 3-3: Number of healthcare professionals at the DHMT categorised by gender and age group (N = 24)

The majority of healthcare professionals at the DHMT are females (n = 17, 70.8%), and they are mostly (n=15, 62.5%) above the age of 36 years (refer to Figure 3-3).

Figure 3-4 compares the age group and type of profession of healthcare professionals at the DHMT.

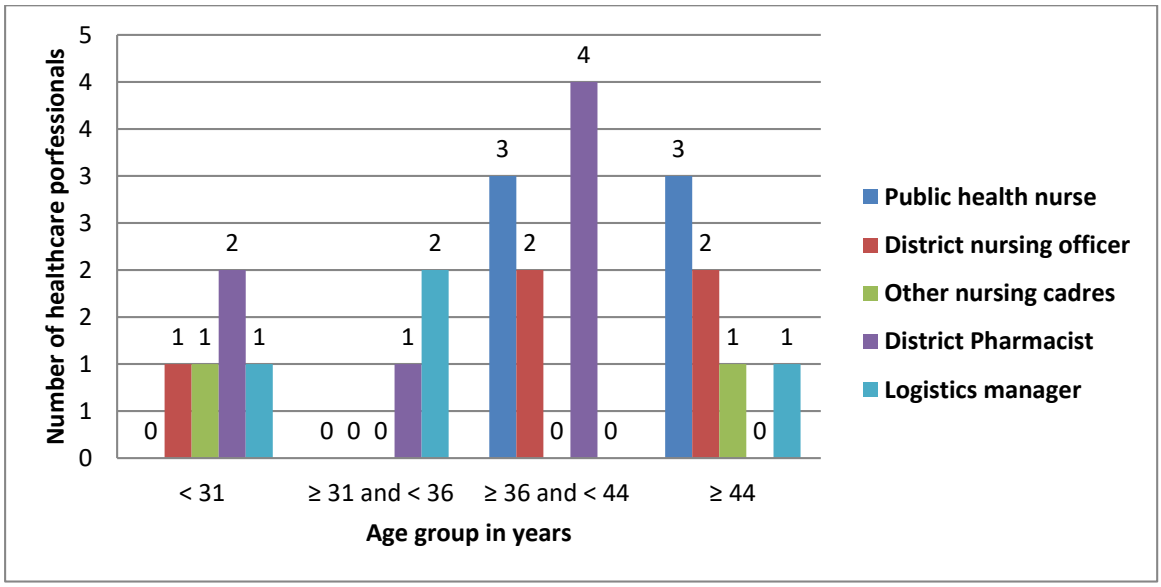

Figure 3-4: Number of healthcare professionals at the DHMT categorised by type and age group (N = 24)

Figure 3-4 depicts that the district pharmacists represented 7(29.2%) of the healthcare professionals at the DHMT of which 4 (16.7%) were older than 36 years. All public healthcare nurses (n=6, 25.0%) and the majority of district nursing officers (n=4, 16.7%) were also above the age of 36 years.

3.3.3 Demographic information of healthcare professionals at the PHC facilities

Table 3-3 presents demographic information of healthcare professionals (N = 116) employed at the PHC facilities. There were 87 PHC managers and 29 healthcare professionals who responded to the questionnaires at the PHC facilities.

Table 3-3: Demographic information of healthcare professionals at the PHC facilities

Demographic information		PHC facilities	
		PHC Manager (N=87) *n*(%)	**Healthcare professionals (N=29) *n*(%)**
Facility the professional works for	ART clinic	53(60.9)	15(51.7)
	OPD	31(35.6)	13(44.8)
	Other	3(3.5)	1(3.5)
Current position at the PHC facility	PHC manager	87(100.0)	0(0.0)
	Healthcare professional	0(0.0)	29(100.0)
Current age group (years)	< 31	19(21.8)	8(27.6)
	≥ 31 and 36	18(20.7)	10(34.5)
	≥ 36 and < 44	30(34.5)	7(24.1)
	≥ 44	20(23.0)	4(13.8)
Gender	Male	16(18.4)	8(27.6)
	Female	71(81.6)	21(72.4)
Highest level of education (completed)	Diploma	54(65.5)	5(17.2)
	Degree	2(2.3)	1(3.5)
	Professional degree	25(28.7)	20(68.9)
	Master's degree	1(1.2)	1(3.5)
	Others	5(5.7)	2(6.9)
Number of healthcare professional positions at the PHC facility	<10	33(38.4)	6(21.7)
	10-20	5(5.8)	0(0.0)
	>20	1(1.2)	0(0.0)
	No response	48(55.2)	23(79.3)

According to the results presented in Table 3-3, the majority of the 87 PHC managers were females (n=71, 81.6%) and hold a diploma (n=54, 65.5%). The majority of PHC managers (n=50, 57.5%) were older than 36 years. In the healthcare professionals' category, the majority were female (n=21, 72.4%), younger than 36 years (n=18, 62.1%), and had professional degrees (n=20, 68.9%).

There were fewer than 10 healthcare professional positions at the PHC facility as reported by PHC manager 33 (38.4%) and healthcare professionals 6 (21.7%). Figure 3-5 presents the percentage of healthcare professionals categorised by their highest level of education (completed) and their position at the PHC facility.

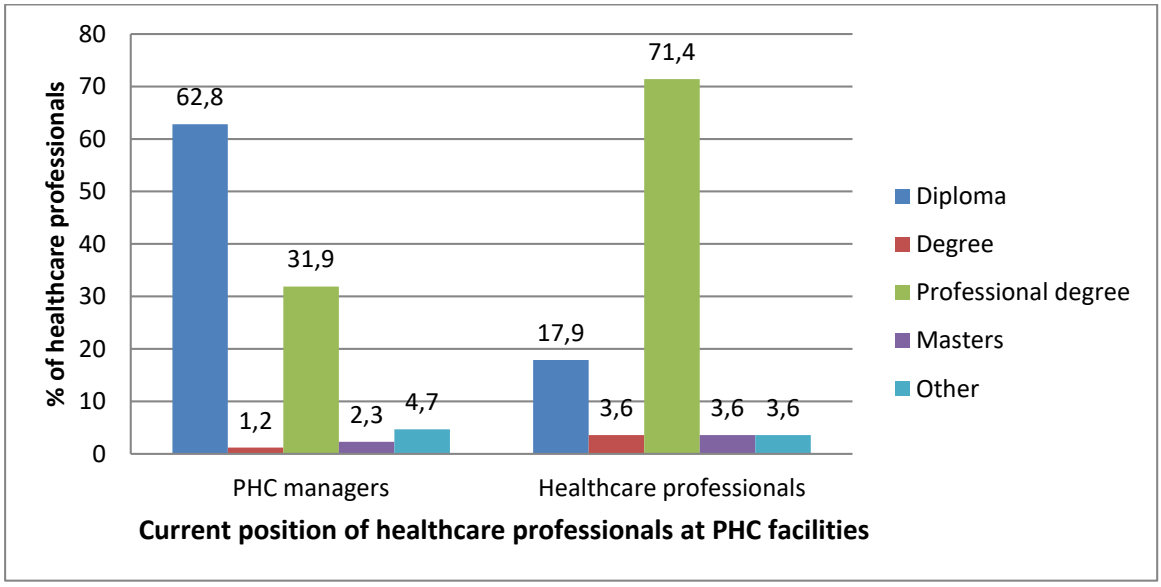

Figure 3-5: Percentage of healthcare professionals categorised by highest education (completed) and current position at the PHC facilities (PHC manager N=87, and Healthcare professionals N29)

The results in Figure 3-5 demonstrate that the majority of PHC managers (n=54, 62.8%) hold a diploma while the majority of healthcare professionals hold professional degrees (n=20, 71.4%). The results indicate a statistically significant association between the highest completed level of education and the position of the healthcare professional (p=0.01), with Cramer's V=0.405 indicating a practically significant association between the highest completed level of education of the PHC managers and healthcare professionals. The results suggest that more qualified healthcare professionals are supervised by less qualified PHC managers.

Figure 3-6 presents the percentage of healthcare professionals at the PHC facilities categorised by gender and position.

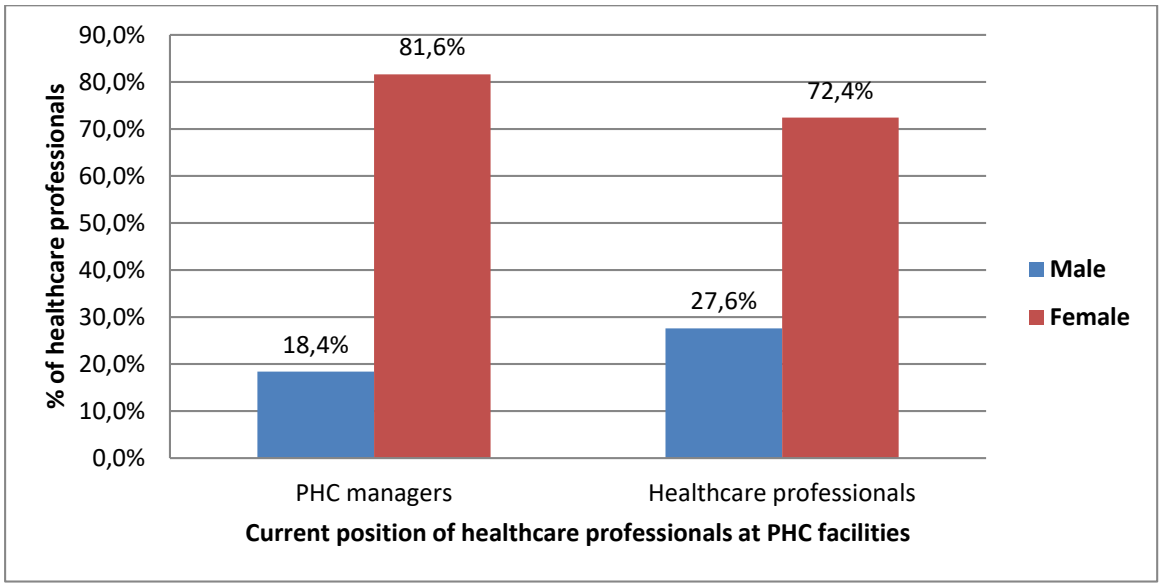

Figure 3-6: Percentage of healthcare professionals categorised by gender and position at the PHC facilities

The results confirmed that there were more females in both groups: PHC managers (n=71, 81.6%) and healthcare professionals (n=21, 72.4%) (refer to Figure 3-6).

3.4 Treatment guidelines review and adoption

The 5th edition of the HIV/AIDS treatment guidelines was published in 2016 in Lesotho. Before the implementation of the 2016 HIV/AIDS treatment guidelines, certain processes such as the adoption and review of the 2015 WHO HIV/AIDS treatment guidelines (WHO, 2015; MOH, 2016). For the purposes of this study, the review and adoption of the 2016 HIV/AIDS treatment guidelines were considered to be pre-implementation activities. During the study, the pre-implementation activities of reviewing and adopting the 2016 HIV/AIDS treatment guidelines were assessed. Table 3-4 presents the results of the involvement of healthcare professionals in the review of the 2016 HIV/AIDS treatment guidelines.

Table 3-4: Involvement of healthcare professionals in the review of the 2016 HIV/AIDS treatment guidelines

Question	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27) *n* (%)	PHC managers (N=87) *n* (%)
Were you involved in the last review of the HIV/AIDS treatment guidelines?	Yes	5	3(11.1)	4(4.6)
	No	0	22(81.5)	7(8.0)
	No response	0	2(7.4)	76(87.4)
Is there operational research planned to go hand in hand with the implementation of the latest HIV/AIDS treatment guidelines?	Yes	1	3(11.1)	-
	No	0	9(33.3)	-
	No response	4	15(55.5)	-
Are the results of the operational research used for future reviews of HIV/ADS treatment guidelines?	Yes	1	3(11.1)	-
	No	0	1(3.7)	-
	No response	4	23(85.2)	-

(-) the question was not asked at that level.

All the healthcare professionals (n=5) at the HIV/AIDS programme were involved in the review of 2016 HIV/AIDS treatment guidelines. Very few healthcare professionals were involved at the DHMT (n=3, 11.1%) and PHC facilities (n=4, 4.6%). A few healthcare professionals at the HIV/AIDS programme (n=1) and DHMT (n=3, 11.1%) mentioned the presence of annual operational or implementation research and indicated that the results of this research were used in the review of the 2016 HIV/AIDS treatment guidelines (refer to Table 3-4).

According to the results of the open-ended questions, the review of the 2016 HIV/AIDS treatment guidelines was based on the 2015 WHO HIV/AIDS treatment guidelines (WHO, 2015). The review of treatment guidelines occurs because of changes in the treatment patterns of HIV/AIDS.

Healthcare professionals stated that the review process of the 2016 HIV/AIDS treatment guidelines entailed the following:

- The WHO released new HIV/AIDS treatment guidelines.

- An announcement regarding the changes made to the HIV/AIDS treatment guidelines in Lesotho.

- A task team was formed to discuss the WHO report.

- A stakeholder meeting was held to seek consensus. The stakeholders involved in the review of the 2016 HIV/AIDS treatment guidelines included Elizabeth Glaser Pediatrics AIDS Foundation (EGPAF), The United States President's Emergency For AIDS Relief (PEPFAR), Enhancing Quality Through Innovation Policy & Practice (EQUIP), Chemotic laboratory, HIV/AIDS programme, TB programme, family health division, doctors, nurses, pharmacists, the WHO, Baylor College of Medicine Children's Foundation (BCMF), Lesotho Network of AIDS Organisation (LENASO), AIDS Healthcare Foundation (AHF), Centre for Disease Control (CDC), Joint United Nations Programme on HIV/AIDS (UNAIDS).

The some healthcare professionals described the adoption process of HIV/AIDS treatment guidelines in the open-ended question as follows:

> "*After the reviewing of guidelines by MOH, senior managers are sensitised, consultative stakeholder meetings are held to adopt the guidelines. The guidelines are finalised and printed and distributed, and training of healthcare providers follows*"

These results reveal that the evidence for the 2016 HIV/AIDS treatment guidelines review was not adopted from locally produced information but from the WHO generated information, even though some healthcare professionals (n=4) indicated the contrary. Harrison *et al*. (2013:8) stipulated the need to use a 'planned action' approach to integrate knowledge created outside their context with local practice.

3.5 Implementation processes

In this section, the empirical results of implementation processes involved in the current HIV/AIDS treatment guidelines in Lesotho will be presented. These empirical results emanate from the first objective of the study:

- To explore current HIV/AIDS treatment guideline implementation processes in Lesotho.

The results are reported on the various implementation processes: planning, engaging, executing and reflecting and evaluating (Damschroder *et al*., 2009:50).

3.5.1 Planning

Planning is defined as a degree to which processes or tasks are developed ahead of time (Damschroder *et al*., 2009:50). The presence of an implementation plan was assessed, and the results thereof, at all levels, are presented in Table 3-5.

Table 3-5: Implementation plan at all levels

Question	Response	HIV programme (N=5) *n*	DHMT (N=27) *n(%)*	PHC facilities	
				PHC managers (N=87) *n(%)*	Healthcare practitioners (N=29) *n(%)*
Was there an implementation plan for the latest HIV/AIDS treatment guidelines?	Yes	5	9(33.3)	8(9.4)	0(0.0)
	No	0	16(59.3)	4(4.7)	0(0.0)
	No response	0	2(7.4)	75(86.2	29 (100.0)

The results in Table 3-5 show that the presence of an implementation plan which was reported by all healthcare professionals at the HIV/AIDS programme (n=5), although it was confirmed by only a few healthcare professionals at the DHMT (33.3%; n =9). Only eight (9.4%) PHC managers confirmed it.

An open-ended question was asked in order to obtain descriptions of the implementation plan from the healthcare professionals at the HIV/AIDS programme. Four healthcare professionals described the plan as either a schedule or a roadmap. One healthcare professional summarised the contents of the implementation plan as follows: sensitisation of senior management, a sensitisation workshop for healthcare workers, training of healthcare workers and meetings with technical working groups.

The fact that the implementation plan was confirmed by only a few healthcare professionals at the DHMT and PHC facilities, indicates that it was not fully shared with them. The study of Valaitis *et al*. (2016) state that planning processes affect implementation in most health units. The study also reported that planning documents include financial costs and public health human resource allocation (Valaitis *et al.,* 2016). Pfadenhauer *et al*. (2017) state that thorough planning is necessary for the successful implementation of any treatment guideline. However, at both the DHMT and PHC facilities,

healthcare professionals mentioned self-developed plans that guide daily activities. Moullin *et al*. (2016) mention that the leader of a service developed a procedure to deliver this service. Damschroder and Lowery (2013:51) emphasise that where there is no formal implementation plan, assessing the quality of execution – by using the plan – becomes impossible.

3.5.2 Engaging

Engaging entails the involvement of a healthcare professional who will take responsibility to ensure that the implementation of treatment guidelines succeeds (Edmondson *et al*., 2001). It also entails attracting and involving suitable individuals in the implementation and use of the intervention through social marketing, education, role modelling and training, among other related activities (Damschroder *et al.,* 2009:11). Table 3.6 presents the results of engagement at all levels.

Table 3-6: Aspects of engaging at all levels

Engaging	**Response**	**HIV programme (N=5) *n***	**DHMT (N=27) *n(%)***	**PHC facilities**	
				PHC managers (N=87) *n(%)*	**Healthcare practitioners (N=29) *n*(%)**
Involvement with the implementation of the 2016 HIV/AIDS treatment guidelines	Yes	5	-	-	-
	No	0	-	-	-
	No response	0	-	-	-
Did you have a role to play in the implementation of the latest HIV/AIDS treatment guidelines?	Yes	-	19(70.4)	5(5.7)	-
	No	-	8(29.6)	6(6.9)	-
	No response	-	0(0.0)	76(87.4)	-
At the DHMT, is there a staff member in each district who is assigned the responsibility of implementing the HIV/AIDS treatment guidelines?	Yes	1	-	-	-
	No	0	-	-	-
	No response	4	-	-	-

(-) indicates that the question was not asked at a particular level.

The results in Table 3-6 reveal that the healthcare professionals at the HIV/AIDS programme agreed that they were all involved in the implementation of the 2016 HIV/AIDS

treatment guidelines. On the other hand, 70.4% (n=19) of healthcare professionals at the DHMT indicated that they played a role in the implementation of treatment guidelines.

The results indicate that very few PHC managers 5 (5.7%) confirmed they play a role in the 2016 HIV/AIDS treatment guidelines implementation.

Responses to open-ended questions related to engagement activities, as given by healthcare professionals of both the HIV/AIDS programme and the DHMT, confirmed that PHC facilities were the area of focus for the implementation of HIV/AIDS treatment guidelines. The roles that the DHMT healthcare professionals fulfil: training and supervision of healthcare workers, supervision and monitoring of proper use of the treatment guidelines by the facilities. Participation in the dissemination of treatment guidelines to the healthcare workers in the district health centres, to avail ARV and laboratory commodities to achieve the 90:90:90 target by 2020.

PHC managers indicated in the open-ended questions that they disseminated the 2016 HIV/AIDS guidelines to the rest of the staff and gave feedback – in a form of a workshop – to the village healthcare workers, healthcare centre committee members and community.

Damschroder *et al*. (2013:10) state that engaging a formally appointed internal implementation leader has a positive influence on the organisation. He/she plans, supervises and provides resources to support the implementation of change (Battilana *et al*., 2010). Nevertheless, DHMT healthcare professionals and PHC managers indicated that they played a role in the implementation of HIV/AIDS treatment guidelines and carried out activities such as the distribution of treatment guidelines and overseeing that patient care and treatment follow treatment guidelines (refer to Table 3-6).

In the study of Damschroder and Lowery (2013:51), it was clear that no individual was engaged as an opinion leader or champion; however, physicians were actively implementing changes. The need was expressed, however, for an enthusiastic, skilled, capable and committed coordinator who would make sure that the plan is implemented. Carroll *et al*. (2007) and Pearson *et al*. (2005:978) emphasise that engaging the main characters in the implementation process is essential for implementation success.

3.5.3 Executing

Execution is described as the carrying out of implementation activities according to plan (Damschroder *et al*., 2009:50). Executing was measured through patient care and treatment activities such as patient consultation, ARV dispensation and drug supply.

Table 3-7 presents the aspects of executing the HIV/AIDS treatment guidelines as reported by PHC managers (Please note that the question was directed to PHC managers only).

Table 3-7: Executing the HIV/AIDS treatment guidelines as reported by PHC managers

Questions	PHC managers (N=87) *n*(%)					
	Nurse	**Pharmacist**	**Pharmacy technician**	**Doctor**	***Multiple responses**	***Not indicated**
Who consults with HIV/AIDS patients at the PHC?	42(48.3)	-	-	2(2.3)	5(5.7)	38(43.7)
Who dispenses ARV at the PHC?	20(23.0)	6(6.9)	13(14.9)	-	10(11.5)	38(43.7)
Who is responsible for ARV drug supply at the PHC if no pharmacist is available?	26(29.9)	-	12(13.8)	-	8(9.2)	41(47.1)

(-) means that the professionals was irrelevant in that question. * Multiple response is more than one response, and *not indicated means answer was left out

The PHC managers 42 (48.3%) reported nurses to be responsible for patient consultation at the PHC facilities (refer to Table 3-7). The PHC managers mentioned nurses 20 (23.0%) and pharmacy technicians 13 (14.9%), and to some lesser extent pharmacists 6 (6.9%), as the healthcare professionals who dispense ARVs at the PHC facilities. Nurses 26 (29.9%) were reported as the professionals who were mainly responsible for supplying ARVs when no pharmacist was available.

Figure 3-7 presents the responses regarding whether or not patient care and treatment are given according to HIV/AIDS treatment guidelines.

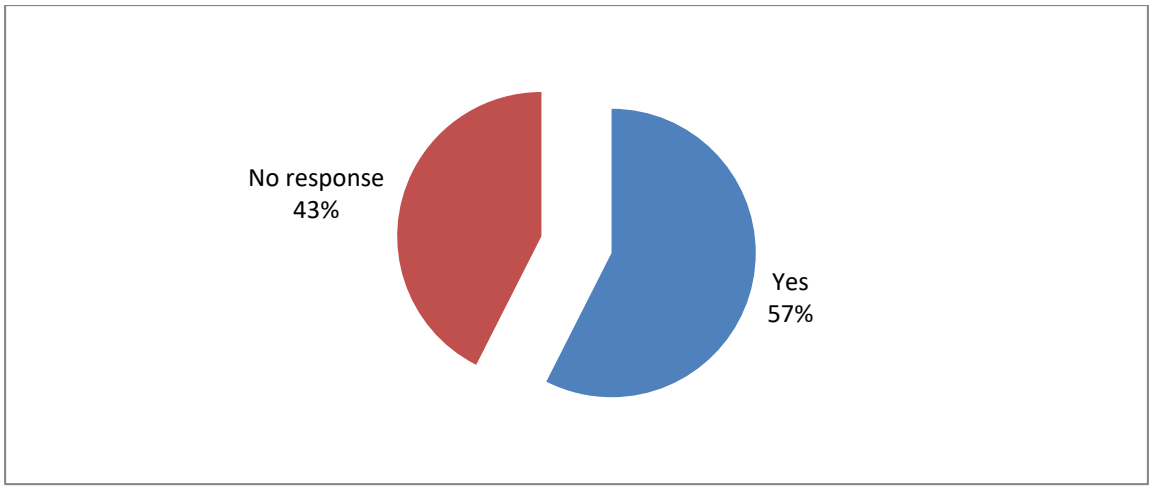

Figure 3-7: Are patient care and treatment given according to HIV/AIDS treatment guidelines? (N = 87)

The results presented in Figure 3-7 indicate PHC managers 50 (57.5%) agreed that patient care and treatment were given according to HIV/AIDS treatment guidelines and the others decided not to respond to the questions.

Figure 3-8 presents the results regarding whether or not PHC managers have a copy of the HIV/AIDS treatment guidelines.

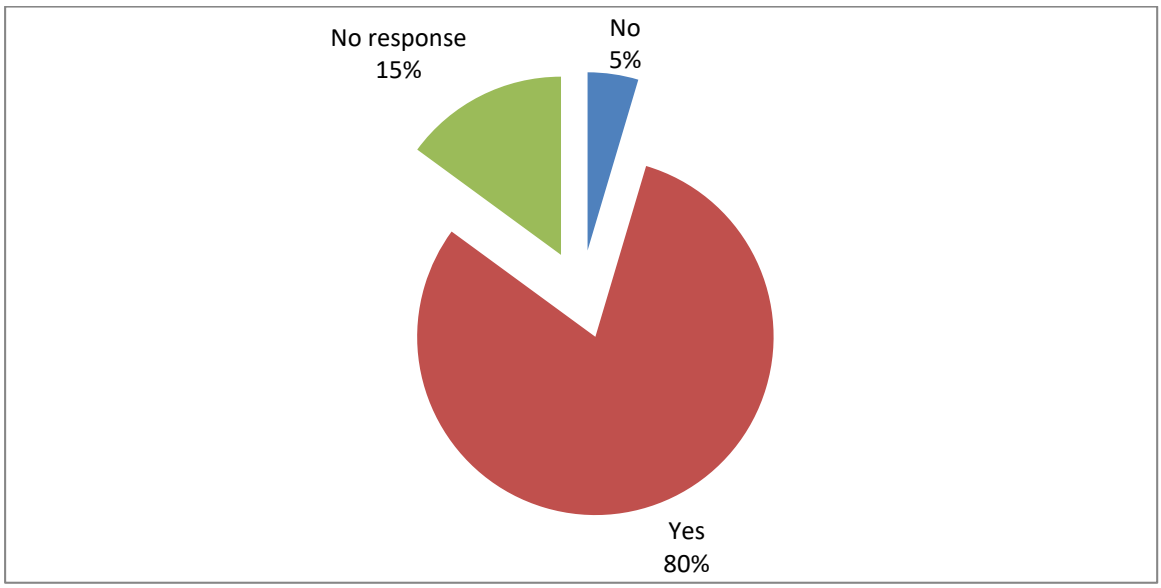

Figure 3-8: Do you have a copy of the HIV/AIDS treatment guidelines? (N=87)

Most PHC managers 70 (80.5%) reported that they had a copy of the HIV/AIDS treatment guidelines (refer to Figure 3-8).

Figure 3-9 presents the results of how often PHC managers use the HIV/AIDS treatment guidelines.

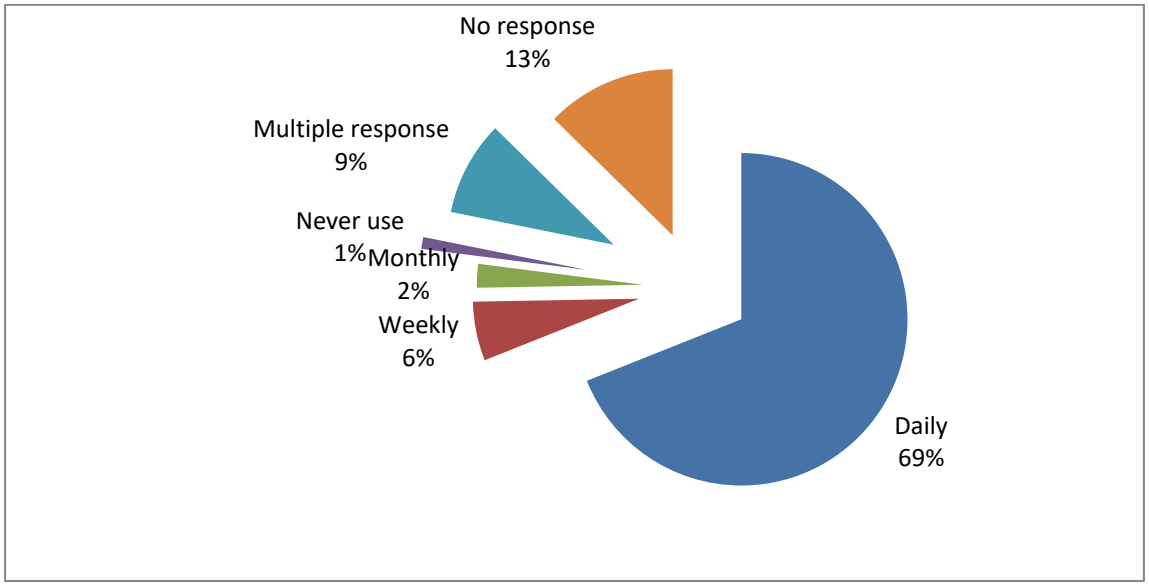

Figure 3-9: How often do PHC managers use the HIV/AIDS treatment guidelines? (N=87)

Results from Figure 3-9 indicate that the majority of PHC managers 60 (69.0%) used the HIV/AIDS treatment guidelines daily.

The open-ended questions revealed that the role PHC managers played in the implementation of HIV/AIDS treatment guidelines was to distribute copies of the latest HIV/AIDS treatment guidelines to staff, teaching PHC facilities staff about changes in the latest HIV/AIDS treatment guidelines and ensuring the use of the latest HIV/AIDS treatment guidelines. The results indicated that HIV/AIDS treatment guidelines, formulary, textbooks and electronic textbooks are used in prescribing.

According to planning results stated in Chapter 3, Section 3.5.2, the presence of an implementation plan was scarcely reported, particularly at the PHC facilities as the area of focus for the implementation of 2016 HIV/AIDS treatment guidelines. Therefore, executing was based on the use of HIV/AIDS treatment guidelines' activities that were highlighted by Proctor *et al.* (2012). The authors state that most studies do not evaluate

implementation success but rather treatment outcome success. HIV/AIDS treatment guidelines are implemented in order to guide prescribing, dispensing and ARV drug supply. The empirical study results (refer to Table 3-7) show that prescribing, dispensing and drug supply at the PHC facilities are mainly carried out by nurses.

Yapa and Bärnighausen (2018:154) indicate that in resource-limited countries and communities, there is an 'inverse care law' namely the presence of a high disease burden but low availability of resources. Some studies stated that executing involves carrying out planned activities in a timely manner using key personnel (Carroll *et al.,* 2011:29; Pearson *et al*., 2005:198). Damschroder and Lowery (2013:51) report that it is difficult to measure or define executing without a formal plan. However, healthcare professionals themselves mentioned daily plans that are used to guide their daily duties.

3.5.4 Reflecting and evaluating

Dedicating time to reflect and debrief is important for the implementation of treatment guidelines. Evaluation uses feedback from reports and qualitative data (Damschroder *et al*., 2009:50). Reflecting and evaluating – task agreements between employer and employee include tasks that are related to evaluation of the performance of healthcare professionals in another level for example, DHMT healthcare professionals has a task to supervise and evaluate performance of PHC manager at the PHC facilities. Table 3-8 presents the results of reflecting and evaluating using task agreements.

Table 3-8: Reflecting and evaluating using task agreements

Question	Response	HIV programme (N=5) *n*	DHMT (N=27) *n (%)*
Do you have a task agreement for performance monitoring with personnel of the DHMT and /or HIV/AIDS programme personnel responsible for implementing the HIV/AIDS treatment guidelines at district level?	Yes	1	-
	No	0	-
	No response	4	-
In your supervisory capacity at the PHC, do you have a task agreement with PHC managers for their performance with regard to the implementation of HIV/AIDS treatment guidelines?	Yes	-	17(63.0)
	No	-	6(22.2)
	No response	-	4(14.8)

(-) the question was not asked at that level

The results showed that 63.0%(n=17) of DHMT healthcare professionals had task agreements to supervise healthcare professionals at PHC facilities. At the HIV/AIDS programme, only one healthcare professional indicated that he/she has a task agreement which includes the supervision of healthcare personnel at the DHMT. Figure 3-10 presents the results of the number of healthcare professionals (N=27) at the DHMT, as categorised by the presence of task agreements and the highest level of education completed .

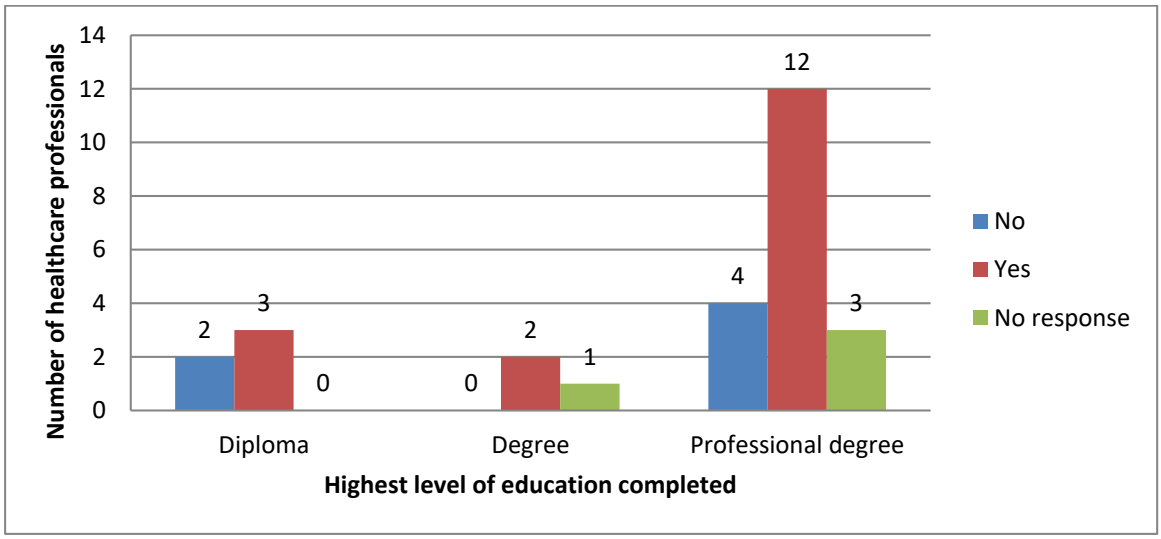

Figure 3-10: The number of healthcare professionals at the DHMT categorised by presence of task agreements and highest level of education (N=27)

The majority of healthcare professionals at the DHMT who hold a professional degree 12 (44.4%) agreed that their task agreements included the supervision of healthcare professionals at the PHC facilities. (refer to Figure 3-10).

Figure 3-11 presents the number of healthcare professionals at the DHMT, as categorised by age group and the presence of a task agreement which included the supervision of healthcare personnel at PHC facilities. The majority of healthcare professionals older or equal 36 years old 14 (51.9%) at the DHMT agreed that their task agreement included the supervision of healthcare professionals at the PHC facilities.

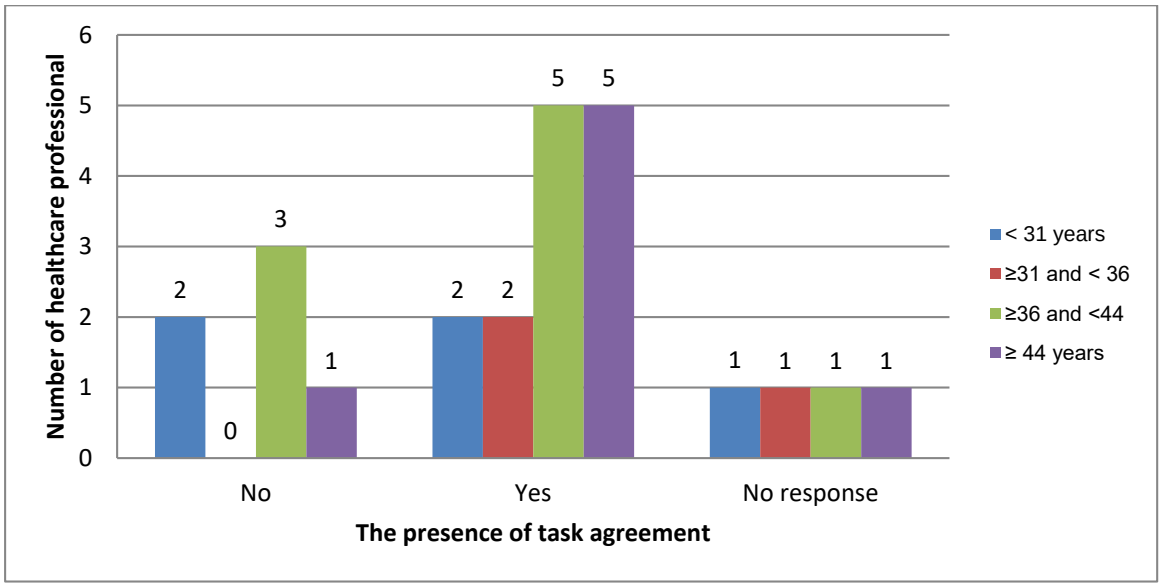

Figure 3-11: The number of healthcare professionals at the DHMT categorised by age group and the presence of task agreements (N=24)

Table 3-9 shows the results of reflecting at the PHC facilities.

Table 3-9: Reflecting and evaluating at the PHC facilities

Reflecting and evaluating	Response	PHC managers (N=87) *n*(%)	Healthcare professionals (N=29) *n*(%)
In your supervisory capacity at the PHC, do you have a task agreement with PHC professionals for their performance with regard to the implementation of HIV/AIDS treatment guidelines?	Yes	42(48.2%)	13(44.8%)
	No	26(30.0%)	13(44.8%)
	No response	19(21.8%)	3(10.4%)

The PHC managers 42 (48.2%) reported that they have task agreements with healthcare professionals under their supervision, and the healthcare professionals 13 (44.8%) at the PHC facilities confirmed the presence of task agreements (refer to Table 3-9).

Results from the open-ended questions from some of the DHMT and PHC managers are next presented. The results of supervision and feedback from DHMT healthcare professionals – from the open-ended questions – are summarised as

> *"…supervisory visits and quarterly PHC meetings at district level which evaluates performances and challenges encountered during the quarter."*

"In supervisory visits, check prescriptions and see if guidelines are followed, check how many patients who were referred to the facility to be linked to care and initiated on ART and whether SOP was followed…"

"…by mentoring the facility staff helping them to implement the changes…"

"…receiving of the PHC quarterly reports, monitor consumption against the number of patients affected regimen…"

"…supervisory checklist, their achievement is measured against 90:90:90 target…"

"…assess and evaluate the work-plan of the PHC manager and identifying any gaps and resolve them…"

PHC managers reported about supervision and feedback at the PHC facilities. Firstly, they reported about supervision and feedback given by healthcare professionals from the DHMT. Secondly, they reported about the supervision they provided to the healthcare professionals at the PHC facilities.

From the open-ended questions about supervision and feedback, the PHC managers were supervised at the PHC facilities by the DHMT healthcare professionals, the responses are summarised as follows:

"*DHMT mentors our facility to ensure we work according to set standards, using MOH guidelines, it is carried out based on performance and it is done by performance appraisals"*

"MOH partners carry out mentoring processes within the facilities…"

The results of some the PHC managers' supervision and feedback of the healthcare professionals at the PHC facilities are summarised as follows:

"…*regularly evaluating all the patient treatment guidelines and receiving every aspect of care and also the registers…"*

"I draw my own goals in regard to care and treatment, then evaluation is done based on the correct implementation of such goals…"

"We have daily work plans, appraisal forms and assessment lists…"

"We assess if patients' care is done according to the guidelines e.g. CD4 count viral load monitoring creatinine clearance…"

"…formation of quality improvement project initiated for evaluation, it is done quarterly using quarterly tools… "

"Pharmacists check jobs, duties and tasks given to pharmacy technicians, thereafter appraisal forms are filled and submitted each year"

In summary, reflecting and evaluating – using task agreements as a form of performance evaluation – were assessed in the study. At the HIV/AIDS programme level, the task agreements were reported by the manager, not the healthcare professionals. At the DHMT level, more healthcare professionals 17 (63.0%) indicated that they evaluate performance using task agreements (refer to Table 3-8). Activities include checking if treatment guidelines are followed, if 90:90:90 targets by 2020 are met and the number of patients against the ARV consumption record.

The study of Medves *et al.* (2010) indicates the need to evaluate guideline implementation and dissemination strategies and their appropriateness for a team-based healthcare setting. Apart from task agreements, healthcare professionals mention that reflecting and evaluating were also measured through supervisory checklists and MOH assessment tools. At the PHC facilities, half of the PHC managers 42 (48.2%) reported on task agreements (refer to Table 3-9), if patient care is given according to treatment guidelines 50 (57.5%) (refer to Figure 3-7) and check if work is done according to MOH standards (from responses of the open-ended questions). Damschroder *et al.* (2009) state the importance of taking time to reflect and debrief to promote shared learning and improvements.

3.5.5 Summary of key findings of implementation processes

- Planning

An implementation plan was available as reported by all healthcare professionals at the HIV/AIDS programme (n=5), DHMT 9 (33.3%) and PHC facilities 8 (9.4%) (refer to Table 3-5).

- Engaging

Engaging a healthcare professional with specific responsibility to oversee the implementation of treatment guidelines was reported by one healthcare professional at the HIV/AIDS programme level. However, healthcare professionals at the DHMT 19 (70.4%) and PHC facilities 5 (5.7%) (refer to Table 3-6) indicated that they do play a role in the implementation of HIV/AIDS treatment guidelines, which included distributing treatment guidelines and overseeing that patient care and treatment follow the 2016 HIV/AIDS treatment guidelines.

- Executing

Executing was measured through patient care and treatment activities such as consulting patients, ARV dispensing and drug supply. PHC managers reported that nurses primarily conduct patient consultations 42 (48.3%), dispense ARVs 20 (23.0%) and manage drug supply 26 (29.9%) (refer to Table 3-7). PHC managers also indicated that they had copies of 2016 HIV/AIDS treatment guidelines 70 (80.5%) and reported daily use 60 (69.0%) (refer to Figure 3-8 and Figure 3-9). The results showed that PHC managers 50 (57.5%) (refer to Figure 3-7) confirmed that care and treatment were given according to HIV/AIDS treatment guidelines.

- Reflecting and evaluating

Reflecting and evaluating focus on using task agreements as evaluation tool, as reported by healthcare professionals at the HIV/AIDS programme (n=1), and the DHMT 17 (63.0%) levels (refer to Table 3-8). PHC managers 42 (48.2%), and healthcare professionals 13 (44.8%) reported the same. Where task agreements were not available, other forms of evaluation were used, such as monitoring and evaluation, appraisal forms, assessment lists and ART registers.

3.6 Implementation drivers

The results will describe implementation drivers in order to address the third objective of the empirical study:

- To investigate how implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.

Implementation drivers consist of competency drivers, leadership drivers and organisation drivers (Fixsen *et al*., 2005).

3.6.1 Roles and responsibilities of healthcare professionals at the different levels

The roles and responsibilities were assessed with open-ended questions at all three levels. Table 3-10 illustrates the roles and responsibilities of healthcare professionals at the HIV/AIDS programme, the DHMT and the PHC facilities.

Table 3-10: Roles and responsibilities of healthcare professionals at different levels

Level	Responsibilities	*N*
HIV/AIDS programme (N=5)	Coordinate HIV/AIDS programme	3
	Develop protocols	1
	Mobilise funds	1
	Review guidelines	3
	Supervise DHMT	3
	Develop policies	1
	Facilitate the implementation of guidelines	1
	Surveillance	2
	Manage referral system	2
	Develop training materials	1
	Coordinate clinical service	1
	Build capacity	2
	Develop work plans	1
DHMT (N=27)	Train healthcare workers	3
	Monitor the proper use of the guidelines in PHC facilities	1

Level	Responsibilities	*N*
	Supervise healthcare workers	3
	Disseminate guidelines to the district health facilities	1
	Avail ARV and laboratory commodities to achieve 90:90:/90 by 2020.	3
PHC manager at the PHC facilities (N=87)	Distribute copies of the latest HIV/AIDS treatment guidelines	9
	Teach PHC staff about changes in HIV/AIDS treatment guidelines	8
	Ensure the use of the latest HIV/AIDS treatment guidelines	9

The results presented in Table 3-10 indicate that healthcare professionals at the HIV/AIDS programme were responsible for reviewing treatment guidelines, supervising DHMTs, developing training manuals and facilitating HIV/AIDS treatment guidelines implementation.

Healthcare professionals at the DHMT train and supervise healthcare professionals at the PHC facilities on the proper use of the HIV/AIDS treatment guidelines, disseminate the HIV/AIDS treatment guidelines and ensure that ARVs and laboratory commodities are available at the PHC clinics (refer to Table 3-10).

The responsibility of PHC managers, as indicated in Table 3-10, is to distribute copies of the HIV/AIDS treatment guidelines, train healthcare professionals at the PHC facilities on changes and oversee that the HIV/AIDS treatment guidelines are followed when ARVs are prescribed and dispensed.

3.6.2 Competency drivers

Competency drivers form part of core implementation drivers. They are intended to raise confidence and competence for healthcare practitioners through staff selection, training, coaching and performance assessment (Fixsen, 2005). To investigate competency drivers, it is important to focus on the years of experience and the highest level of education the healthcare professionals attained (refer to Chapter 3, Section 3.3).

Table 3-11 shows the number of years' experience of healthcare professionals at HIV/AIDS programme, DHMT and PHC managers at the PHC facilities in the different sectors, MOH, CHAL and private healthcare sector.

Table 3-11: Years of experience of healthcare professionals at HIV/AIDS programme, DHMT and PHC managers at the PHC facilities.

		Level		
Sector	**Years of experience**	**HIV/AIDS programme (N=5) *(n)***	**DHMT (N=27)**n*(%)**	**PHC managers (N=87)* *n*(%)**
MOH	0	0	2(7.4)	36 (41.4)
	1-10	3	14(51.9)	30(34.5)
	11-20	1	8 (29.6)	18(20.7)
	21-30	1	3(11.1)	2(2.3)
	>30	0	0 (0.0)	1(1.1)
CHAL	0	2	23(88.5)	41(47.1)
	1-10	2	3(11.5)	35(40.2)
	11-20	1	0 (0.0)	7(8.1)
	21-30	0	0 (0.0)	4(4.6)
	>30	0	0 (0.0)	0(0.0)
Private healthcare sector	0	4	23(88.5)	74(85.1)
	1-10	1	3(11.5)	13(14.9)
	11-20	0	0 (0.0)	0 (0.0)
	21-30	0	0 (0.0)	0 (0.0)
	>30	0	0 (0.0)	0 (0.0)

*Not all the healthcare professionals responded.

The results in Table 3-11 reveal that one healthcare professionals at the HIV/AIDS programme level had up to 30 years of working experience at the MOH. One of the healthcare professionals at the CHAL facilities have up to 20 years of work experience. There is one healthcare professional with up to 10 years of work experience in the private healthcare sector.

At the DHMT, most healthcare professionals 24 (89.6%) have up to 20 years of experience working for the MOH and very few worked at CHAL 3 (11.1%) or the private healthcare sector 3 (11.1%) (refer to Table 3-11).

PHC facilities include both clinics and OPDs in the hospitals in MOH and CHAL. The results show that the majority of PHC managers did not work at the MOH in the past 36 (41.4%), CHAL 41 (47.1%) and private healthcare facilities 74 (85.1%). About 30 (34.5%)

of the healthcare professionals at the PHC facilities have worked for up to 10 years at the MOH, 35 (40.2%) at CHAL and 13 (14.9%) at the private healthcare facilities (refer to Table 3-11).

3.6.2.1 Selection

The results of this section are similar to engaging under the implementation process (refer to Chapter 3, Section 3.5.2), where the following question was asked to the HIV/AIDS programme healthcare professionals: At the DHMT level, is there a staff member in each district who is assigned the responsibility of implementing HIV/AIDS treatment guidelines? The results indicate that only one person responded and according to the results (refer to Table 3-6).

3.6.2.2 Training

The study also assessed the training of healthcare professionals at all levels. The training was done in two ways: the healthcare professionals were themselves trained and they were involved in training other healthcare professionals. Table 3-12 presents the results of the training of healthcare professionals at the HIV/AIDS programme, DHMT and PHC levels.

Table 3-12: Training of healthcare professionals at the HIV/AIDS programme, DHMT and PHC levels

Training	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=29) *n*(%)	PHC managers (N=87) *n*(%)	Healthcare professionals (N=29) *n*(%)
Did you receive training on the 2016 treatment guidelines?	Yes	5	15(55.6)	45(51.7)	22(75.9)
	No	0	9(33.3)	2(2.3)	7(24.1)
	No response	0	3(11.1)	40(46.0)	0(0.0)
Were you trained to train other healthcare professionals?	Yes	5	6(22.2)	41(47.1)	‘
	No	0	4(14.8)	3(3.5)	‘
	No response	0	17(63.0)	43(49.4)	‘

*Not all the healthcare professionals responded.

The results in Table 3-12 depicts that all healthcare professionals at the HIV/AIDS programme level (n=5) were trained on the changes made to the 2016 HIV/AIDS treatment

guidelines, and they all confirmed that they were trained to train other healthcare professionals.

More than half of the DHMT healthcare professionals 15 (55.6%) were also trained. Training of the DHMT healthcare professionals took place where they attended training at the central level (HIV/AIDS programme), or when the training was carried out in the district itself.

The DHMT health professionals provided training to PHC healthcare professionals, either at the offices of the DHMT in the district or at the PHC facilities. The results indicate that more than half of PHC managers 45 (51.7%) were trained. Healthcare professionals 22 (75.9%) at the PHC facilities also indicated that they received training. All the healthcare professionals at HIV/AIDS programme (n=5) and also at the DHMT 6 (22.2%) reported that they were trained to train other healthcare professionals. PHC managers 41 (47.1%) also reported that the received training to train other healthcare professionals (refer to Table 3-12).

The following results apply to the training provided by the DHMT healthcare professionals to the healthcare professionals at the PHC facilities. Figure 3-12 presents the DHMT healthcare professionals, as categorised by training at the PHC facilities and age groups.

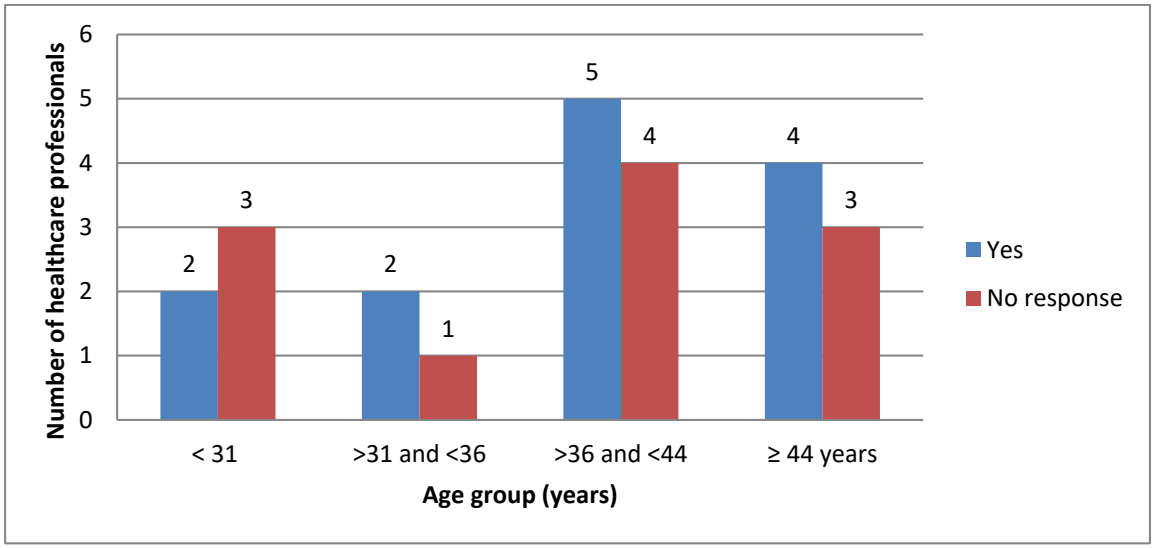

Figure 3-12: Number of DHMT healthcare professionals, as categorised by training of healthcare professionals at the PHC facilities and age group (N=24)

The results show that the DHMT healthcare professionals who were older than 36 years of age 9 (3.3%) provided training to healthcare professionals at the PHC facilities.

Figure 3-13 presents the number of DHMT healthcare professionals, as categorised by training provided to healthcare professionals at the PHC facilities and the highest level of education attained by the DHMT healthcare professionals.

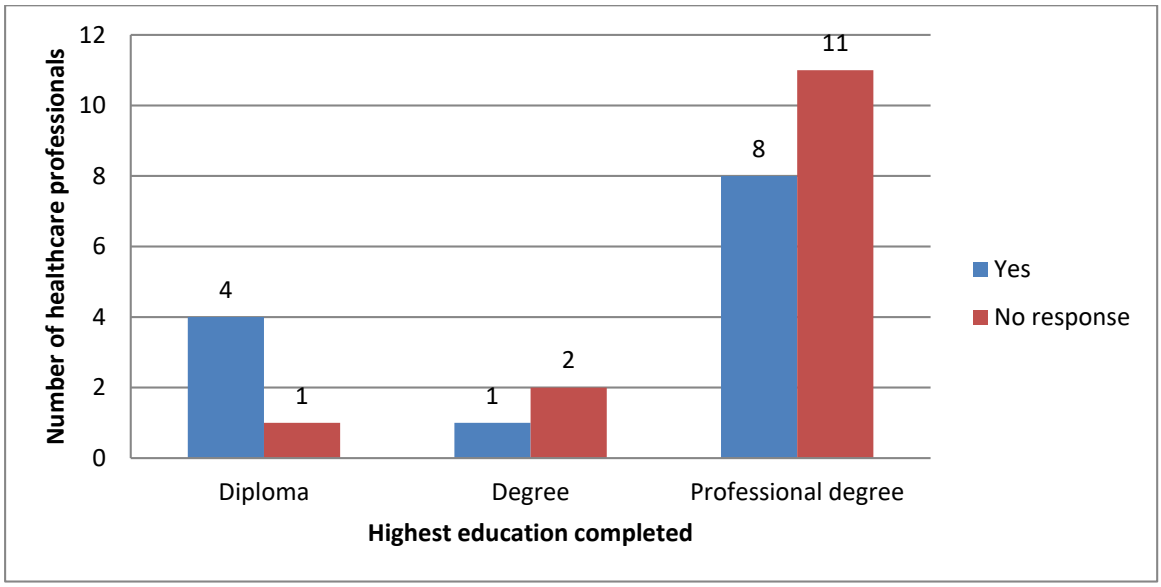

Figure 3-13: The number of DHMT healthcare professionals, as categorised by highest level of education and training for healthcare professionals at the PHC facilities (N=27)

The results of Figure 3-13 reveal that eight (29.6%) DHMT healthcare professionals who have professional degrees provided training of healthcare professionals at the PHC facilities.

Training of healthcare professionals at the PHC facilities took place in various ways:

- The healthcare professionals attended a training workshop at the district level.
- DHMT health professionals came to the PHC facility to provide training.
- A healthcare professional – who was trained – or a PHC manager provides training.

The training of healthcare professionals at the PHC facilities on changes made to the HIV/AIDS treatment guidelines took place.

Figure 3-14 presents the results of training of PHC managers at the PHC facilities. The majority of PHC managers (n=62, 71.3%) reported that they were trained.

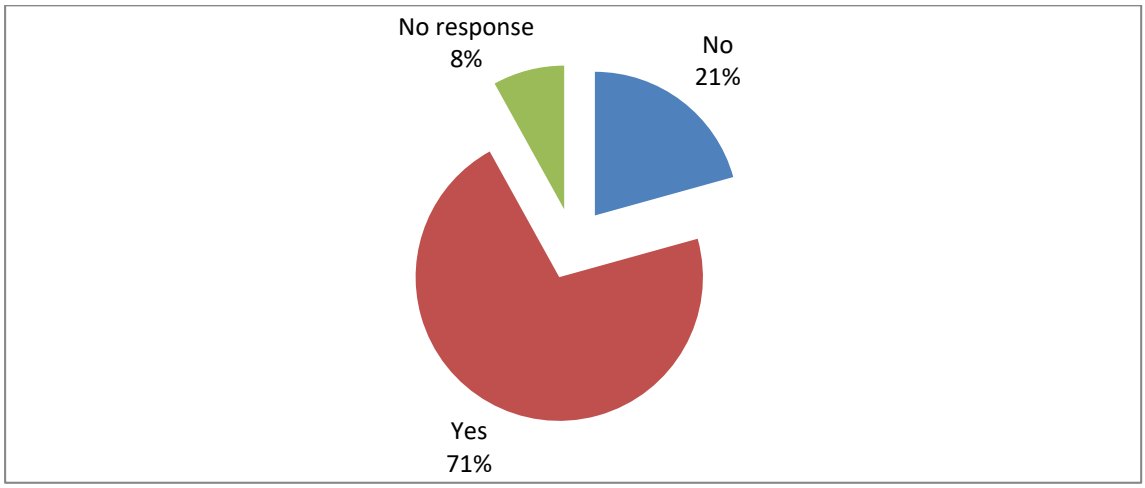

Figure 3-14: The number of PHC managers who received training or who did not receive training (N=87)

In Figure 3-15, the PHC managers reported that they were trained to train other healthcare professionals about the implementation of the HIV/AIDS treatment guidelines. According to the results, 47.1%(n=41) of PHC managers indicated that they received training to train other healthcare professionals at the PHC facilities.

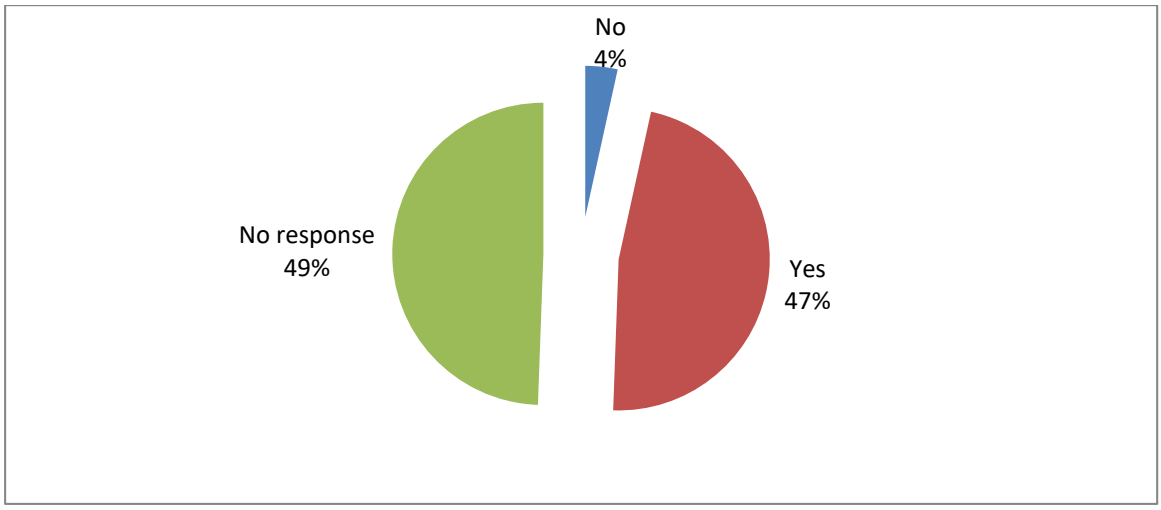

Figure 3-15: The number of PHC managers who were trained to train other healthcare professionals (N=87)

Table 3-13 presents the associations among the PHC managers and healthcare professionals regarding the training of healthcare professionals at the PHC facilities.

According to the Chi-square test and the effect size (Cramer's *V*), a statistically significant association (*p*=0.034) exists between PHC managers and healthcare professionals regarding the training of healthcare professionals at the PHC facilities with a practically visible association (Cramer's *V*=0.273). A statistically significant association (*p*=0.021) exists between the type of healthcare professionals and the training they received in order to train other healthcare professionals with a practically visible association (Cramer's *V*=0.316).

Table 3-13 Association between the PHC managers and healthcare professionals regarding the training of healthcare professionals

Factor	Variable	Chi-square test *p*-value	Cramer's *V* - value
PHC managers and healthcare professionals	Are health professionals trained to implement current treatment guidelines?	0.034	0.273
	Were you trained to train others?	0.021	0.316

3.6.2.2.1 Open-ended questions and their responses

The results from the open-ended questions confirmed that the duration of training for healthcare professionals (n=5) working at the HIV/AIDS programme level was one week, provided by the WHO.

The training covered the following:

- An overview of the new HIV/AIDS treatment guidelines.
- A comparison between the previous and the new HIV/AIDS treatment guidelines.
- Changes and new logistical requirements (a drug with low-temperature storage).
- New clinical management requirements (such as regimen changes, laboratory tests and monitoring aspects).
- New staff requirements (such as laboratory personnel who know how to operate new test machines).

- The importance of adherence and implementation plan of HIV/AIDS treatment guidelines.

Healthcare professionals (n=5) at the HIV/AIDS programme level reported that the training was evaluated after completion of the training when the evaluation forms completed. The results reveal that healthcare professionals at both the DHMT and the PHC facilities were trained to train other healthcare professionals. The healthcare professionals (n=5) at the HIV/AIDS programme level indicated that they provided training to the healthcare professionals at the PHC facilities.

Considering the results of the open-ended questions in the DHMT questionnaire, healthcare professionals indicated that they were trained for mainly one week 10 (37.0%), some indicated that they were trained for less than one week 4 (14.8%) (refer to Annexure M) and one professional was trained for two weeks. They further elaborated that they were trained by the MOH and EGPAF 15 (55.6%). The topics that were covered in the training were similar to those given to the healthcare professionals at the HIV/AIDS programme. Four healthcare professionals indicated that they evaluated the training by completing the evaluation form. The results also show that healthcare professionals at the DHMT 5 (18.5%) were trained to train other healthcare professionals. Lack of time and resources were indicated as possible reasons for not providing training 2 (7.4%).

At the PHC level, PHC managers 45 (51.7%) indicated that they were trained to implement the changes made to the treatment guidelines. They mentioned that the training was provided by healthcare professionals from the HIV/AIDS programme 13 (14.9%), development partners 16 (18.4%), consultants 3 (3.4%) and others. The duration of the training ranged from less than one week 7 (8.1%), one week 29 (33.3%), two weeks 6 (6.9%) and not specified 4 (4.6%). The topics covered in the training included (refer to Annexure M)

- The transmission HIV, HIV life cycle, types of ARV regimens, mode of action, HIV testing services.

- ARV drug regimen and side effects.

- The integrated management of HIV/AIDS-related adult and paediatric illnesses, early diagnosis and exposed infant prophylaxis, PMTCT – including infant diagnosis and monitoring.

- Test and treat.
- First-line and second-line regimens.
- Sexual and reproductive health.

PHC managers 19(21.8%) reported that the training was evaluated by completing an evaluation form (refer to Annexure M).

The training to inform healthcare professionals about changes made to the 2016 HIV/AIDS treatment guidelines took place. The training covered changes in the diagnosis of patients with HIV/AIDS, eligibility to start ARV treatment, patient care and treatment of HIV/AIDS as reported by PHC managers 62 (71.3%). The training was mainly conducted in the form of a workshop 24 (27.6%) or onsite training 12 (13.8%) (refer to Annexure M).

The results of the open-ended questions indicated that where it was not possible to attend the training, healthcare professionals were informed through:

- *"A WhatsApp® message was sent outlining the training."*
- *"We were informed about the changes in the latest HIV/AIDS treatment guidelines by colleagues…"*
- *"The training materials were also posted on the nurse WhatsApp® group…"*

It was also reported that nurses who attend a training workshop gave onsite training to their colleagues at the workplace.

The PHC managers were requested to state whether or not they thought previous HIVAIDS treatment guidelines were fully implemented. Only 9.2% (n=8) of the PHC managers were of the opinion that the 2016 HIV/AIDS treatment guidelines were fully implemented. They listed the following aspects as fully implemented:

- PMTCT.
- Initiation of ART to patients with CD4 count 500 and below.
- Initiation of ART to all pregnant women regardless of CD4 count.
- Monitoring side effects of drugs and drug to drug interaction.

- CD4 count as a percentage and treatment failure.
- The first line of ART, if patient is not responding, start second line,
- Pre-exposure prophylaxis (PEP),
- Continuation of the same ART regimen which applies to all HIV positive patients.

3.6.2.3 Coaching

Coaching was evaluated at the PHC level where PHC managers coach healthcare professionals in their daily work on the use of HIV/AIDS treatment guidelines and the filling of relevant registers. According to the results of the open-ended questions, PHC managers mentioned that they regularly evaluate patient care services according to treatment guidelines and the ART registers.

3.6.2.4 Performance assessment

Performance assessment forms part of the competencies of healthcare professionals at different levels. Table 3-14 presents the results of a performance evaluation using task agreements.

Table 3-14: Performance assessment using task agreements at all levels

Task agreement	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27) *n(%)*	PHC managers (N=87) *n(%)*
Do you have a task agreement with the PHC manager for your performance with regard to the care and treatment of HIV/AIDS?	Yes	1	17(63.0)	42(51.2)
	No	0	6(22.2)	26(31.7)
	No response	4	4(14.8)	14(17.1)

Another aspect is performance assessment or fidelity, which should be measured through task agreements. The manager at the HIV/AIDS programme level indicated that there was a task agreement, and it was also mentioned that they measured performance through received reports.

Performance assessment was also carried out using task agreements of DHMT healthcare professionals 17 (63.0%). Some responses from open-ended questions regarding performance assessment were as follows:

"…carry out evaluation and check prescriptions and see if guidelines are followed, check how many patients are referred to the facility to be linked to care and initiated on ART."

"…mentoring the facility staff, helping them to implement the changes, receiving of the PHC quarterly reports, monitor consumption against the number of patients affected regimen."

"There is a new guideline change we monitor the consumption of the new regimen being introduced, their achievement is measured against 90:90:90 target, assess and evaluate the work-plan of the PHC manager and identifying any gaps and resolve them."

"…by forming quality improvement projects where we will monitor if the project passes or fails at the end and if the staff members are able to finish the project within the planned time, check the number of patients put on ART monthly, and using MOH assessment tools."

Performance assessment was investigated and PHC managers 42 (51.2%) indicated that they also use task agreements to assess the performance (regarding the treatment of HIV/AIDS using treatment guidelines) of healthcare professionals at the PHC facilities.

The some open-ended results revealed that:

"They regularly evaluate all the patient treatment guidelines and receive every aspect in patient-care and also the registers, appraisal forms and assessment list, "

"the formation of quality improvement project initiated for evaluation, it is done quarterly using quarterly tools…"

"DHMT mentors our facility to ensure we work according to set standards using MOH guidelines".

Competency drivers develop the competence and confidence of practitioners. This is done by attending to staff selection, training, coaching and performance assessment (fidelity) which contribute to sustainable and improved population outcomes (Bertram *et al*., 2011a; Bertram *et al*., 2011b). The results of this study show that no one was selected to oversee the implementation of the 2016 HIV/AIDS treatment guidelines at any level. The study of

Bertram *et al*. (2011a) indicates the importance to have someone with knowledge, skills and aptitude implement treatment guidelines.

The results of this study show that healthcare professionals at different levels were trained (on changes made to the 2016 HIV/AIDS treatment guidelines) for one week. All healthcare professionals working in the HIV/AIDS programme were trained. However, not all healthcare professionals working at DHMT 15 (55.6%) and PHC facilities 45 (51.7%) were trained (refer to Table 3-12). The training covered various topics and strategies within the guidelines. The study of Bertram *et al*. (2014) states that the confidence and competence of healthcare professionals are built through training and coaching.

According to the open-ended questions, the responses specified that the training of healthcare professionals was conducted during meetings or in the form of training workshops, on-site training or presentations. Those who did not attend training workshops were given information about the changes made to the guidelines by colleagues who attended the workshops. The reasons for not training all healthcare professionals were related to lack of time and resource allocation.

3.6.3 Leadership drivers

Fixsen *et al*. (2005) identify leadership drivers namely technical leadership and adaptive leadership as core components of implementation drivers. Here, leadership is considered a process, and is categorised according to the challenges that are presented to the leadership (Heifetz & Linsky, 2002).

3.6.3.1 Technical leadership

Leaders are normally faced with two types of challenges, one is technical challenge and the other one is adaptive. According to Heifetz and Linsky (2002) technical challenges are well defined, the solutions are known, and anyone with adequate expertise and organizational resources can solve them. The results of supervision and feedback will be presented and discussed in this section.

Supervision was provided by healthcare professionals of the HIV/AIDS programme to the professionals working at the DHMT. DHMT healthcare professionals, in turn, supervised PHC managers, who in turn supervised PHC healthcare professionals on the care and treatment of HIV/AIDS using treatment guidelines. Table 3-15 presents the results of the

supervision and feedback of healthcare professionals at the HIV/AIDS programme and DHMT levels.

Table 3-15: Supervision and feedback at the HIV/AIDS programme and DHMT levels

Question	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n(%)*
Did you supervise the subsidiary level regarding the implementation of the HIVAIDS treatment guidelines?	Yes	5	23(85.2)
	No	0	3(11.1)
	No response	0	1(3.7)
Did you provide/receive feedback after every supervisory visit?	Yes	5	23(85.2)
	No	0	3(11.1)
	No response	0	1(3.7)

*Not all the healthcare professionals responded.

The results in Table 3-15 indicate that all five HIV/AIDS programme level healthcare professionals supervised the DHMT healthcare professionals at different districts for one-week every quarter, and they use 90:90:90 targets and other supervisory tools. The HIV/AIDS programme level healthcare professionals also mentioned that they provided feedback after every supervisory visit, which they do during the same week of supervision. The results also show that the HIV/AIDS programme level healthcare professionals sent reports back to the healthcare professionals at the DHMTs and share such quarterly reports with other districts.

The DHMT is the primary supervisory team at the districts for all PHC facilities (Table 3-15). The results show that healthcare professionals at the DHMT (n=23, 85.2%) supervise PHC facilities on the implementation of the 2016 HIVAIDS treatment guidelines (Table 3-15). According to the open-ended questions, during supervision, the DHMT healthcare professionals check the following: use of and adherence to treatment guidelines, drug supply management, assess records and ART registers. The results of the open-ended questions showed that the DHMT healthcare professionals check if routine tests have been carried out and also check monthly medicine pick-up records.

The DHMT healthcare professionals (n=23, 85.2%) also reported that they provide feedback to the PHC facilities after supervision has taken place (Table 3-15). The results indicate that feedback was provided by sending reports back to the PHC facilities,

conducting feedback meetings with PHC managers and using a WhatsApp® group to give feedback to all healthcare professionals teams. Some said they give feedback immediately after supervision.

The results of the DHMT healthcare professionals regarding the supervision of PHC managers and feedback provided were stratified by age group, gender and the highest level of education attained.

Figure 3-18 presents the DHMT healthcare professionals, as categorised by gender and supervision of the PHC managers at PHC facilities. The results in Figure 3-18 show that the majority of female DHMT healthcare professionals (n=18, 66.7%) provided supervision for PHC managers at the PHC level (please also note that males were few in number and a higher number still supervised PHC level).

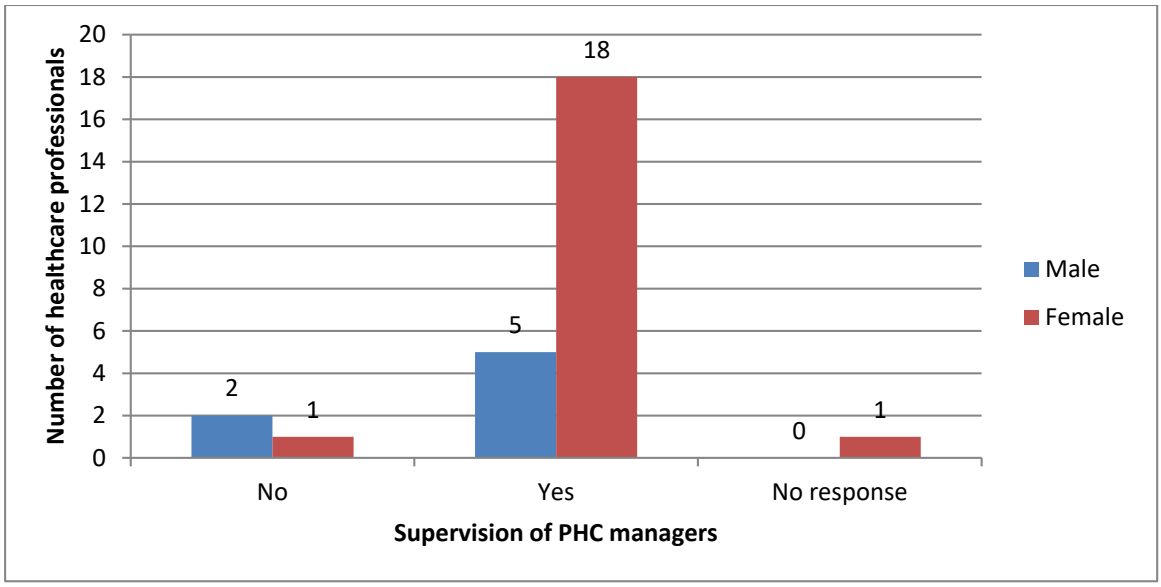

Figure 3-16: Number of DHMT healthcare professionals, as categorised by gender and supervision of PHC managers (N=27)

Figure 3-19 presents the number of DHMT healthcare professional, as categorised by supervision of PHC healthcare professionals and the highest level of education attained.

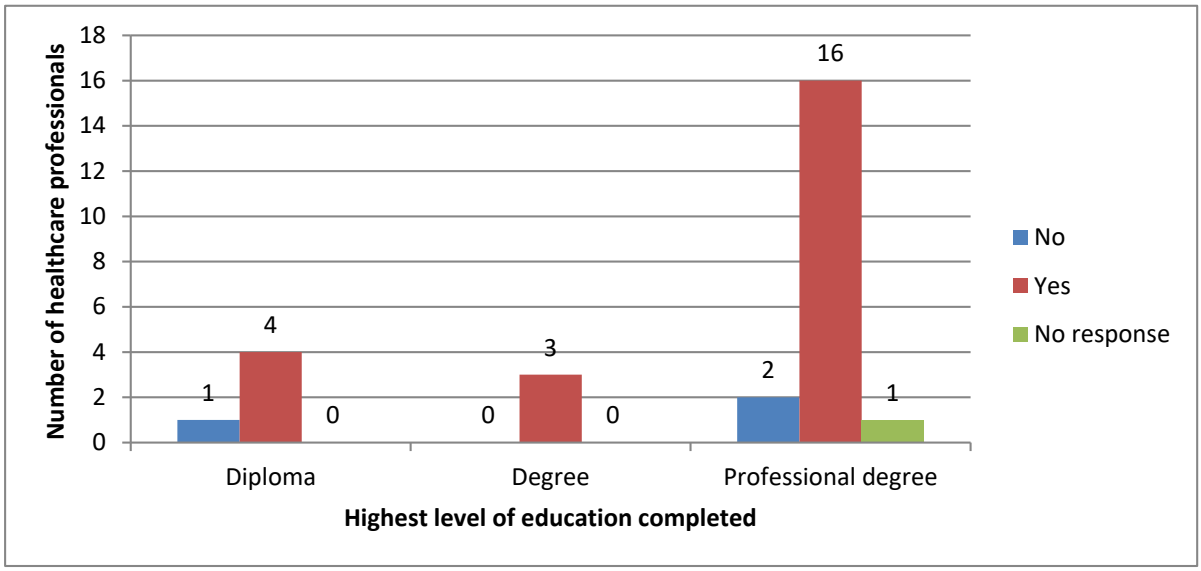

Figure 3-17: Number of DHMT healthcare professionals, as categorised by supervision of and highest level of education attained (N=27)

The results of Figure 3-19 indicate that the majority of DHMT healthcare professionals 16 (59.3%) who supervise healthcare professionals at the PHC facilities hold professional degrees.

Figure 3-20 presents the results of the number of DHMT healthcare professionals, as categorised by supervision of healthcare professionals at the PHC facilities and age group. The majority of DHMT healthcare professionals 15 (55.6%) who supervise healthcare professionals at the PHC facilities were 36 years old and older.

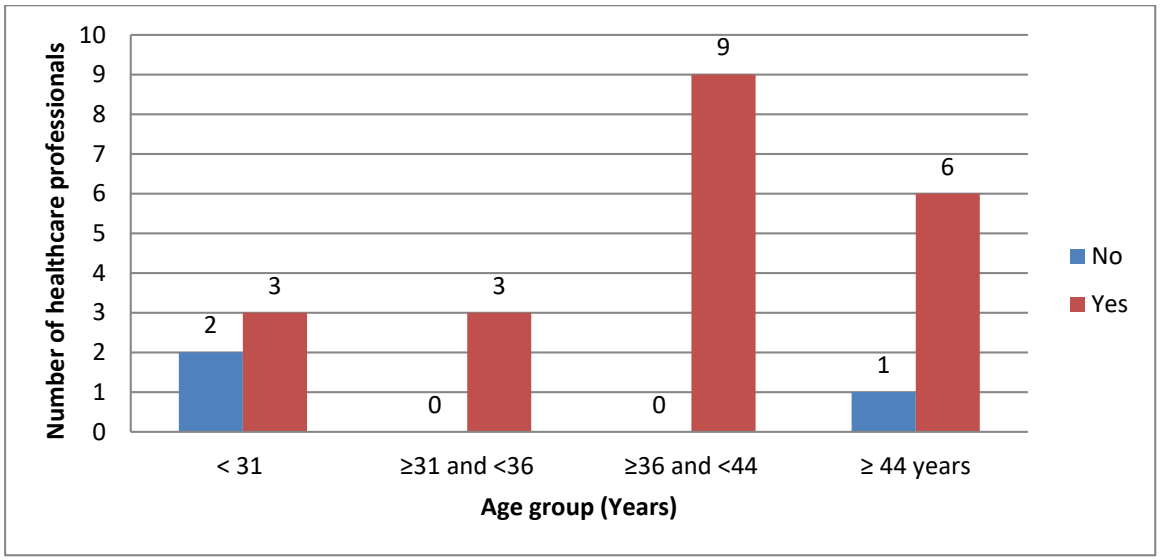

Figure 3-18: Number of DHMT healthcare professionals categorised by supervision and age group (years) (N=24)

Figure 3-21 presents the number of DHMT healthcare professionals, as categorised by gender and feedback give to the PHC healthcare facilities. The results reveal that mainly females from the DHMT 19 (70.4%) gave feedback to the healthcare professionals at the PHC facilities (please note that majority of males also reported even though they were few in numbers).

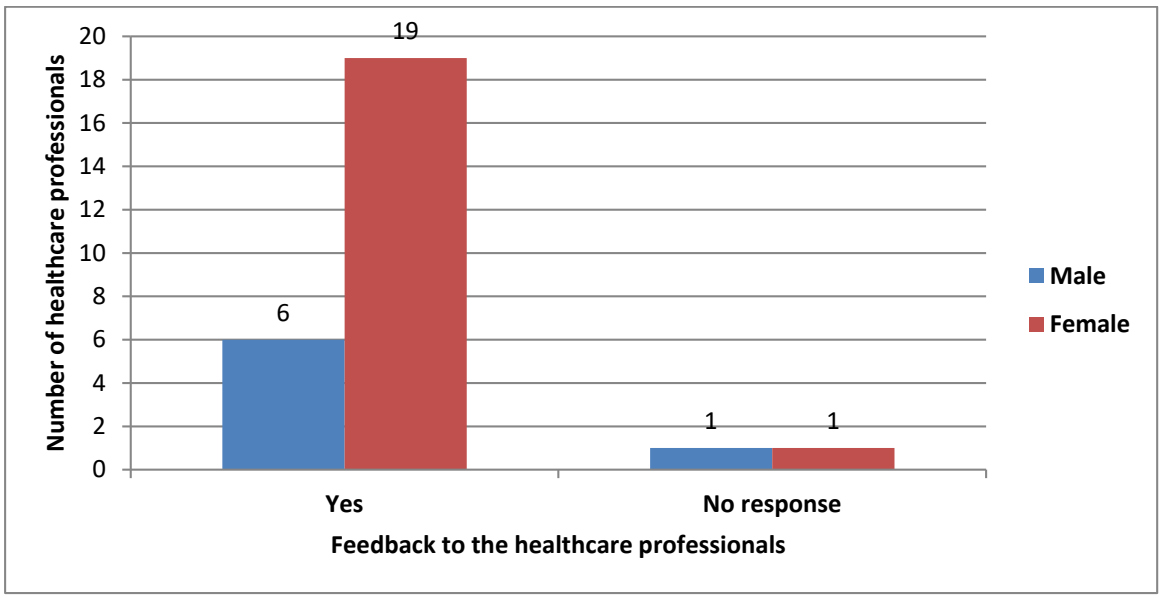

Figure 3-19: The number of DHMT healthcare professionals, as categorised by gender and feedback given to PHC healthcare professionals (N=27)

Figure 3-22 presents the number of DHMT healthcare professionals, as categorised by feedback provided to the healthcare professionals at the PHC facilities and age group. The results of Figure 3-22 showed that the majority of DHMT healthcare professionals 16 (59.3%) who provided feedback after supervision was above 36 years

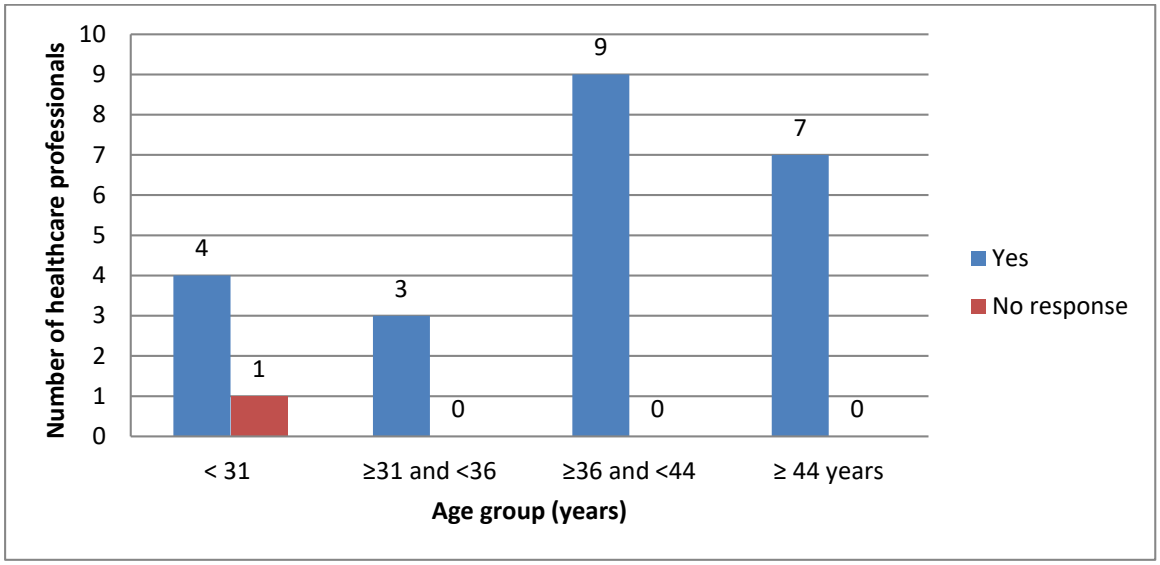

Figure 3-20: Number of DHMT healthcare professionals, as categorised by feedback provided and age group (N=24)

Figure 3-23 presents the number of DHMT healthcare professionals, as categorised by feedback to the PHC facilities and highest level of education attained. The results of Figure 3-23 specified that the majority of DHMT healthcare professionals 17 (62.9%) who held professional degrees provided feedback to PHC facilities after supervision had taken place

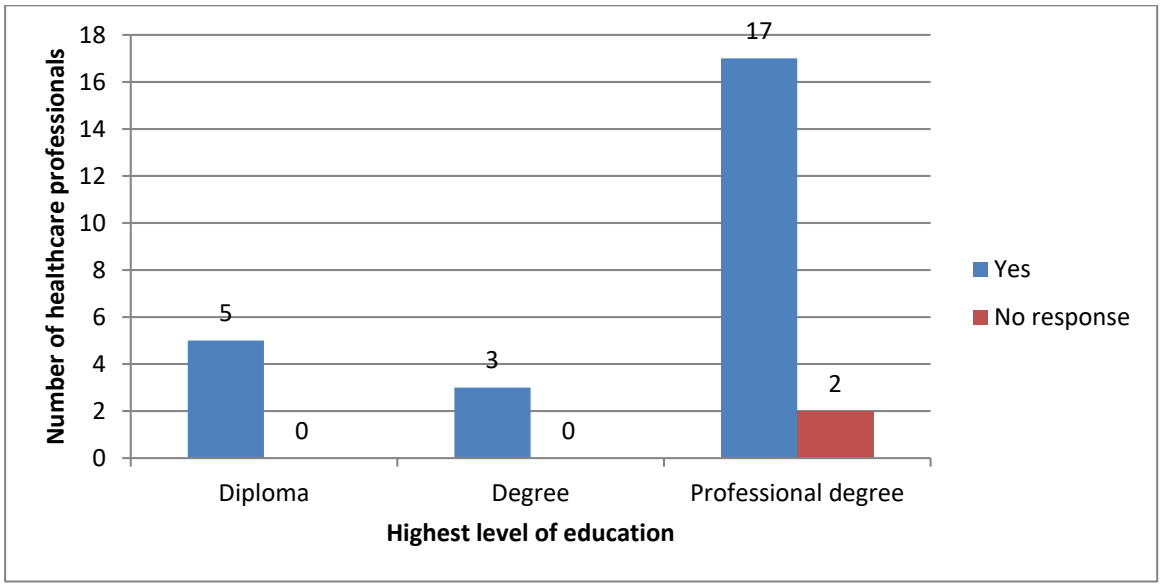

Figure 3-21: The number of DHMT healthcare professionals, as categorised by feedback to the PHC facilities and highest level of education completed (N=27)

PHC managers also supervised healthcare professionals in PHC facilities providing clinical services at the PHC clinics. The results in Table 3-16 indicate that the PHC managers 52 (61.2%) supervised the healthcare professionals in PHC clinics regarding the care and treatment of HIV/AIDS patients using treatment guidelines. The PHC managers 54 (65.9%) also indicated that they provided feedback after supervision.

Table 3-16: Supervision and feedback of healthcare professionals by PHC managers regarding the care and treatment of HIV/AIDS patients using treatment guidelines

Question	Response	PHC managers *n*(%)
Did you supervise healthcare professionals at a subsidiary level regarding the care and treatment of HIVAIDS using treatment guidelines?	Yes	52(61.2)
	No	12(14.1)
	No response	21(24.7)
Did you provide/receive feedback after supervision?	Yes	52(61.2)
	No	5(6.1)
	No response	23(28.0)

According to the results of the open-ended questions, some of the supervision of healthcare professionals by PHC managers also entailed administrative activities such as:

> "…*checking of registers, health records, and laboratory records for sending specimens. It also includes the assessment of the use of guidelines, ARV regimens and training".*

However, the responses from the open-ended questions indicated that healthcare professionals in the hospital OPDs were not supervised by the DHMT supervisors 12 (13.8%) (refer to Annexure M). The results of the open-ended questions also revealed that the supervision of healthcare professionals at the PHC facilities was also provided by NGOs. These NGOs were known as implementing partners who were stationed at the district level, and they supervised different aspects of HIV/AIDS management.

Technical leadership is needed to manage (over a long period of time) the continuing implementation of treatment guidelines or innovation for an effective programme. It includes motivation, performance assessment and conflict management. At the DHMT, motivation and reward questions were asked as open-ended questions.

3.6.3.2 Adaptive leadership

Heifetz and Linsky (2002) define leadership according to the type of challenges that are facing the organisation. “Adaptive leadership is based on the premise that leadership is more of a process rather than individual personal capabilities” (Heifetz *et al.*, 2004).

Table 3-17 covers motivation and rewards provided by the healthcare professionals of the HIV/AIDS programme and PHC facilities.

Table 3-17: Motivation and rewards provided by healthcare professionals at the HIV/AIDS programme and PHC levels

Question	Response	HIV/AIDS programme (N=5) *n*	PHC managers (N=87) *n*(%)
Do you motivate staff?	Yes	5	51(61.4)
	No	0	12(14.5)
	No response	0	20(24.1)
Do you reward good performance?	Yes	5	28(34.6)
	No	0	36(44.4)
	No response	0	17(21.0)

*Not all the healthcare professionals responded.

Results of Table 3-17 indicated that all healthcare professionals (n=5) at the HIV/AIDS programme level said that they provided motivation to staff members and reward good performance. At the PHC level, most PHC managers 51 (61.4%) indicated that they provide motivation to healthcare professionals; they 28 (34.6%) also mentioned that they give rewards for excellent performance.

According to the open-ended questions, they specified that this was done by:

> “'…*congratulating them and asking them to continue doing a good job.”*

They also mentioned that supportive and mentoring supervision and quarterly report sharing to monitor performance in each district were also considered as motivation.

The results showed that good performance was rewarded, and poor performance was handled by taking poorly performing districts on a study tour to a district that performs well in order to learn how to perform better. The results of the open-ended questions report that refresher training and mentorship programmes were conducted to assist poorly performing DHMTs.

Conflict management was performed during supervisory visits. Healthcare professionals showed that ART guidelines were used to clear arising arguments. They also indicated that, at times, implementing partners (international NGOs working in a particular district) were requested to assist in solving immediate problems. The healthcare professionals also mentioned that unresolved issues were discussed with senior management of the DHMT.

From the open-ended questions, the DHMT healthcare professionals indicated that healthcare professionals at the PHC clinics were motivated by feedback; appraising staff; and motivational talks, rewards and compliments. They also mentioned that they use encouragement, trophies, mentorship, and workshop attendance with transport reimbursement as a way to further motivate the healthcare professionals working at the PHC facilities.

Healthcare professionals at the DHMT reported that good performance was further rewarded by performance-based financing (PBF), good work appreciation and compliments. Healthcare professionals in this area indicated that they handled poor performance by having discussions and by providing workshops.

DHMT supervisors indicated the need for extra supervisors, teamwork and support to assist poorly performing PHC clinics. The results also mentioned the need for presentations to plan future steps and point out areas of improvement as part of alleviating poor performance.

Results of the open-ended questions showed that conflict resolution was carried out by motivating staff and using leadership ethics. DHMT healthcare professionals also described other aspects such as:

- *Staff rotation.*
- *Supervision.*

- *Professionalism.*
- *Continue to work as normal.*
- *Avoid causes of conflict.*
- *Progressive mentorship.*
- *Inviting managers from the HIV/AIDS programme*.

Regarding motivation, PHC managers 51 (61.4%) stated that personnel at the PHC are mainly motivated by PBF. The results also disclosed various forms of rewards and teambuilding activities, such as a picnic for staff. Holding meetings and having health day celebrations were also regarded as motivation for staff. Similarly, good performance was mainly recognised by giving PBF; although some PHC managers said there was nothing given in 2018. Some of the healthcare professionals further indicated that good performance is appreciated by patients and the community as well as the MOH. The results also indicated that

> "…*good quality of life of the patients… Hence, fewer cases of HIV/AIDS, especially if patients' viral load is suppressed*."

The results of the open-ended questions also indicated that some of the healthcare professionals felt that there was no motivation and no reward for good performance. Some of the reasons for these were as follows:

> "…*fear of discrimination, lack of funds, and it is part of our job, no money to buy those awards."*

> *"…reward was given to the person on the basis of general good performance not specifically HIV/AIDS treatment guidelines implementation."*

According to the open-ended questions' results, poor performance regarding patient care and general performance was addressed. In terms of poor patient care, the results highlight that patients were given two weeks of medicine supply instead of the usual month-long supply and adherence counselling. They mentioned that the DHMT team usually comes to mentor them and gives support where needed.

Responses (of the open-ended questions) related to conflict management were also assessed. There were several activities mentioned for conflict resolution. Some of the

activities were related to patient care, such as adherence to ARVs or default treatment issues where continuous education, counselling and support were used. Other activities were related to interpersonal relationships among healthcare professionals; these were resolved using treatment guidelines, other set standards and meeting discussions.

Some answers to open-ended questions indicated how relationships were maintained after conflict situations had been resolved:

> *"…talking the problem over and deal with it like professionals, consensus reached after the discussion, benefiting patients and the facility."*

When conflict could not be resolved, some relationships between healthcare professionals were maintained in the following manner:

> "…*help staff to keep the good working environment for the sake of patients and leave issues behind and move on, and call for the third party to intervene."*

PHC managers mentioned that discussions held during meetings is a way to resolve conflicts and specify statements such as: give them time to resolve the issues, call the second person to witness and give advice, referral, encourage the staff to ask questions if they don't understand. If these methods of resolving conflicts fail, the PHC managers say that they usually telephonically contact medical officers who are responsible for ART in hospitals, refer to DHMT HIV/AIDS programme officers or district managers. They also say that they call the specific person to show where something has gone wrong, hold meetings, address conflict separately, have direct confrontations and make them air their views.

Leadership drivers consist of both technical leadership which deals with simple challenges and adaptive leadership to solve complex challenges to implementation (Heifetz & Laurie, 1997). Mosson *et al*. (2018) state that exhibiting leadership behaviours such as being supportive, providing feedback, communicating clearly, being a role model and encouraging employee development is essential in the implementation process. Battilana *et al*. (2010:422) specify that managerial tasks such as planning, supervising change and providing resources are also crucial to support the implementation of change.

This study identified the roles of managers at the HIV/AIDS programme level, such as development of protocols, work plans and policies; review treatment guidelines; supervise

the DHMT; facilitate the implementation of guidelines; surveillance; build capacity and mobilise funds.

The roles of PHC managers include the distributing copies of the latest HIV/AIDS treatment guidelines to staff, teaching PHC staff about changes in the latest HIV/AIDS treatment guidelines and ensuring their use. Powell *et al*. (2012) mention key processes such as planning, educating, financing, restructuring, managing quality and attending to policy content.

Supervision was mainly carried out by different levels to the subsidiary level using relevant tools. Supervision entailed:

- Use of treatment guidelines.
- Drug supply management.
- Records and ART registers.
- Check if routine tests have been carried out.
- Patient adherence.
- Monthly medicine pickup.

DHMT healthcare professionals stated that they supervised PHC managers. The PHC managers reported that DHMT healthcare professionals supervised them. Healthcare professionals said that they were supervised by PHC managers. Sloan and Gruman (1988) indicate that supervision is a way that employees take part in implementation.

Feedback from supervision was in the form of discussion and written reports, and it was given during supervisory visits. DHMT healthcare professionals also reported that they provide supervisory feedback to PHC managers. However, a couple of PHC managers indicated that they received feedback from the DHMT after supervision. Healthcare professionals at the PHC facilities also reported that they received feedback after the PHC managers had supervised them. Powell (2012) includes feedback as one of the tasks for leaders in transactional leadership. In the study of Moore *et al.* (2009), new research and policy are informed by feedback data from epidemiological surveillance.

Aarons *et al*. (2014) propose that effective EBP leadership in the implementation process should be proactive, knowledgeable, supportive and perseverant. Another aspect was the

support provided in terms of motivation and conflict management. Motivation was provided by giving feedback, appraising staff, giving a motivational talk, rewarding, complimenting, encouraging, having trophy mentorship, and holding a workshop with transport reimbursement. Mosson *et al*. (2018) state that active implementation leadership considers a contingent reward as an important element. Excellent performance was rewarded by appreciating good work, providing a compliment and performance-based financing. Healthcare professionals indicate that they handle poor performance by holding a discussion and workshops, providing more supervision and teamwork, giving extra support, giving presentations to plan for the future, and pointing out areas of improvement. According to Mosson *et al*. (2018), transactional leadership rewards are considered after achieving mutually agreed upon goals between managers and employees. This can be linked to task agreements and performance appraisal.

3.6.4 Organisation drivers

The organisation drivers provide support in terms of administration and data-assisted decision-making (Blasé *et al*., 2012:17) and include reporting and operational research. Organisation drivers are core components of implementation drivers. They include facilitative administration, decision- support data systems, and systems-level interventions (Bertram *et al*., 2011). For the purpose of this study, reporting refers to the reports related to HIV/AIDS care and treatment generated by the healthcare professionals at the PHC level. These reports are sent to the manager of the HIV/AIDS programme through the DHMT. Table 3-18 presents organisation drivers at all levels.

Table 3-18: Organisation drivers of reporting and operational research

Organisation drivers	Response	HIV/AIDS programme (N=5) n	DHMT (N=27) *n*(%)	PHC managers (N=87) *n*(%)
Do you receive/send reports from PHC?	Yes	5	25(92.6)	64(75.3)
	No	0	0(0.0)	4(4.7)
	No response	0	2(7.4)	17(20.0)

Organisation drivers	Response	HIV/AIDS programme (N=5) n	DHMT (N=27) *n*(%)	PHC managers (N=87) *n*(%)
Was there implementation research planned to go hand-in-hand with the implementation of the latest HIV/AIDS treatment guidelines?	Yes	1	9(33.3)	-
	No	0	3(11.1)	-
	No response	4	15(55.6)	-
Are the results of the operational research used for future reviews of the HIV/ADS treatment guidelines?	Yes	1	3(11.5)	-
	No	0	1(3.9)	-
	No response	4	22(84.6)	-

One person indicated that implementation research was carried out and he/she also indicated that operational research results were used for the review of treatment guidelines.

According to the results of the open-ended questions, the manager of the HIV/AIDS programme reported that annual operational research was carried out to evaluate the implementation of treatment guidelines. The manager of the HIV/AIDS programme also indicated that information coming from the research was used when reviewing treatment guidelines. The results also indicate that healthcare professionals at the HIV/AIDS programme level state that data were collected by nurses and data clerks. The nurses and data clerks were supervised by PHC managers or nurses depending on who collects the data. The data were used for quantification and report writing. The reports include the number of clients tested for HIV, the number of clients who are positive, the number of clients on ARVs, the number of clients newly diagnosed and the number of clients who refused treatment. Electronic and hard copies of the reports were sent to the manager of the HIV/AIDS programme through the DHMT. This report was also shared among other districts.

The healthcare professionals at the DHMT were requested to respond to questions related to organisation drivers. Their responses were similar to those of the HIV/AIDS programme healthcare professionals. The following differences were noticed: with regard to operational research, healthcare professionals 9 (33.3%) (Table 3-18) mentioned that operational research was carried out. However, the majority of the healthcare

professionals 15 (55.6%) at the DHMT did not respond to the question, which suggests that they measure success or failure by using monitoring and evaluation tools and monthly reports. There was an even lower response 3 (11.3%) to the question regarding the use of operational research results for future reviews of HIV/AIDS treatment guidelines. The data collection supervisors, district information officers, AIDS officer and DHMT programme personnel were mentioned as supervisors of data collection.

The study results showed that the reports included the number of rape cases, accidental needle pricks and pre-exposure prophylaxis. Additionally, the reports also included the number of laboratory tests done, reported out of stock medicines, type of ARV regimens used, reported adverse drug reactions and reported toxicities. The number of pregnant women tested and the number of pregnant women enrolled in care also appeared in the report. Furthermore, decision making, planning and budgeting, daily activities guide, mentorship according to standards, quality of reports and performance assessment were mentioned as uses for data in the reports.

PHC managers 64 (75.3%) (Table 3-18) indicated that they sent a report to the HIV/AIDS programme through the DHMT. As mentioned earlier under the HIV/AIDS programme and DHMT, the data were collected at the PHC facilities by data clerks and nurses. These data were collected under the supervision of healthcare professionals and the PHC manager. The reports were used the same way that was mentioned by DHMT, and the report entailed the same items. The question of operational research was not asked at this level.

Data collection is done by nurses and data clerks and is supervised by PHC managers or nurses, depending on who collected the data. The data were used for quantification and report writing. Electronic and hard copies of the reports were sent to the HIV/AIDS programme manager through the DHMT. This report was also shared among other districts.

In the quantitative study of Jacobs *et al*. (2015), one of the sources of data was the annual progress report of 2012 (the 2011 CCOP Annual Progress Reports, submitted in March 2012), two other 2011 surveys were also used, and the last source was information from the physician register (the 2012 American Medical Association Physician Master file which provides data for physician characteristics). These examples were not related to implementation but to the use of quality data for decision-making and other surveys. This shows that if data quality and storage are improved, it would be possible to include locally

collected data to inform decision-making and, thus, be a less costly source of information for future implementation research.

3.6.5 Summary of key findings related to implementation drivers

3.6.5.1 Competency drivers

- Selection

The results show that at the HIV/AIDS programme level, the manager indicated that an individual was selected to be responsible for implementing treatment guidelines at the DHMT level. However, no other healthcare professional at the other levels responded to the question. It can be deduced that although there may be a person allocated for this role, almost no one was aware of it and, therefore, this role is not acted upon.

- Training

All the healthcare professionals (n=5) at the HIV/AIDS programme received training. At the DHMT, about half of the healthcare professionals were also trained 15 (55.6%). At the PHC facilities, healthcare professionals 22 (75.9%) and PHC managers 45 (52.3%) were also trained regarding changes made to the 2016 HIV/AIDS treatment guidelines. The training included workshops and on-site training and was conducted during meetings. Those who failed to attend training received information from those who had attended.

- Coaching

Coaching took place at the PHC level when PHC managers monitored the use of treatment guidelines for patient care and treatment and made sure that the relevant ART registers were filled in correctly.

- Performance assessment

Performance assessment was carried out by means of task agreements. The manager of the HIV/AIDS programme level stated that there was a task agreement that indicated that they had a supervisory role to play in the supervision of the healthcare professionals at the DHMT. Performance evaluation was also carried out using task agreements and healthcare professionals 17 (63.0%) at the DHMT. Performance evaluation was investigated and PHC managers 42 (51.2%) indicated that they use task agreements to

evaluate the performance of healthcare professionals regarding the treatment of HIV/AIDS using treatment guidelines.

3.6.5.2 Leadership drivers

- Adaptive leadership

  - Issues of supervision and feedback were carried out at all levels, for example, the healthcare professionals at the HIV/AIDS programme (n=5) indicated that they supervise the districts through the DHMT. The healthcare personnel at the DHMT 23 (88.5%) indicated that they supervise healthcare professionals at PHC facilities and the PHC managers 52 (61.2%) supervise healthcare professionals working in the PHC facilities on the treatment of HIV/AIDS using treatment guidelines.

  - There is a specified time-allocated period for supervision.

  - Feedback was provided after every supervision at all levels. This was confirmed by healthcare professionals at the HIV/AIDS programme (n=5), DHMT 23 (85.2%), and by PHC managers 54 (65.9%) at PHC facilities.

- Technical leadership

  - Motivation took place at all levels, for example, healthcare professionals at the HIV/AIDS programme (n=5), and PHC managers 51 (61.4%) at the PHC facilities with various activities.

  - Good performance of healthcare professionals is rewarded mainly through PBF at the HIV/AIDS programme (n=5), and at the PHC facilities as indicated by PHC managers 28 (34.6% – which is not the majority).

  - Poor performance was also managed through discussions and workshops.

  - Conflict resolution was carried out through discussions and using treatment guidelines to clear up arguments.

  - Working relations were maintained after conflicts were resolved.

3.6.5.3 Organisation drivers

- Report
    - At the PHC facilities, nurses and data clerks collect data – under the supervision of PHC managers – and write reports.
    - Electronic and hard copies of the reports are generated, as reported by healthcare professionals 64 (75.3%), and sent to the manager of the HIV/AIDS programme (n=5), through the DHMT 25 (92.6%).
    - The information from the reports is used for planning, procurement forecasting, budgeting, and problem-solving.
- Operational research or implementation research
    - Operational research is mentioned by the HIV/AIDS programme manager (n=1) and healthcare professionals at the DHMT 9 (33.3%) and but not at the PHC level.
    - The use of operational research results to review HIV/AIDS treatment guidelines was stated by the HIV/AIDS programme manager (n=1) and DHMT healthcare professionals 3 (11.5%).

3.7 Implementation barriers

This results section reports on the implementation barriers as the third objective of the study.

- To identify barriers of HIV/AIDS treatment guideline implementation in Lesotho

Implementation barriers include personnel factors, knowledge and competency factors, and resource-, financial- and system-related factors. In order to have successful implementation of treatment guidelines, barriers have to be identified (Damschroder *et al*., 2009:50; May *et al*., 2014), well understood and effective strategies have to be planned and used to overcome them when they occur (McGinn *et al*., 2011:46; Proctor *et al*., 2013:139).

Cochrane *et al*. (2007) indicate that previous studies assessing barriers to guidelines implementation used a 5-point Likert scale. Therefore, a 39-item Likert scale, with

ascending 5-point options, was used. Options ranged from ‘strongly disagree’ to ‘strongly agree’, where ‘strongly disagree’ = 1, ‘disagree’ = 2, ‘neutral’ = 3, ‘agree’ = 4 and ‘strongly agree’ = 5. However, for the purpose of this study, ‘strongly disagree’ and ‘disagree’ were grouped together as ‘disagree’ ‘Agree’ and ‘strongly agree’ were combined to make ‘agree’.

If more than 50% of the healthcare professionals at each level agreed that the factor is a barrier, then this study regarded the factor as a barrier (Likert score of 4 and 5). The factor was not considered a barrier if 50% or more of healthcare professionals chose a Likert score of 1 and 2. If 50% of health professionals chose 3 on the Likert score, they abstained from answering and stating whether there was agreement or disagreement (Likert score of 3).

3.7.1 Personnel factors affecting HIV/AIDS treatment guidelines implementation

Personnel factors include lack of nurses, pharmacists and medical doctors at PHC facilities, lack of shared planning between the HIV/AIDS programme, DHMT and PHC facilities, the reluctance of healthcare professions to assume responsibility and fear of change to daily duties (Uebel *et al*., 2011:86; WHO, 2013:25).

Table 3-19 presents the perspectives of healthcare professionals regarding personnel factors that may influence the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT levels.

Table 3-19: Personnel factors affecting the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT

Personnel factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n*(%)
Lack of nurses and medical practitioners at the hospitals of MOH	Agree	5	14(54.0)
	Neutral	0	6(23.0)
	Disagree	0	6(23.0)
Lack of nurses and medical practitioners at the hospitals of CHAL	Agree	5	8(30.8)
	Neutral	0	10(38.4)
	Disagree	0	8(30.8)
Lack of nurses and medical practitioners at the PHC clinics of MOH	Agree	5	12(46.2)
	Neutral	0	5(19.2)
	Disagree	0	9(34.6)

Personnel factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n*(%)
Lack of nurses and medical practitioners at the PHC clinics of CHAL	Agree	2	7(26.9)
	Neutral	3	11(42.3)
	Disagree	0	8(30.8)
Lack of pharmacy personnel at the hospitals of MOH	Agree	2	9(34.6)
	Neutral	3	5(19.2)
	Disagree	0	12(46.2)
Lack of pharmacy personnel at the hospitals of CHAL	Agree	2	9(34.6)
	Neutral	3	8(30.8)
	Disagree	0	9(34.6)
Lack of pharmacy personnel at the PHC clinics of MOH	Agree	5	19(76.0)
	Neutral	0	1(4.0)
	Disagree	0	5(20.0)
Lack of pharmacy personnel at the PHC clinics of CHAL	Agree	5	14(54.0)
	Neutral	0	6(23.0)
	Disagree	0	6(23.0)
Lack of shared planning at the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines	Agree	0	14(54.0)
	Neutral	0	2(7.7)
	Disagree	5	10(38.4)
The reluctance of healthcare professionals to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	Agree	0	13(52.0)
	Neutral	0	2(8.0)
	Disagree	5	10(40.0)
Fear of change to daily responsibilities	Agree	0	13(50.0)
	Neutral	0	6(23.0)
	Disagree	5	7(26.9)

*Not all the healthcare professionals responded.

The results in Table 3-19 confirm that healthcare professionals at both the HIV/AIDS programme (n=5) and most of those at the DHMT 14 (54.0%) agree that lack of nurses and medical practitioners at the hospitals of the MOH are barriers to implementation of HIV/AIDS treatment guidelines. The healthcare professionals at the HIV/AIDS programme also consider the lack of nurses and medical practitioners at the hospitals of CHAL (n=5) as barriers. Lack of pharmacy personnel at the PHC clinics of MOH is considered by healthcare professionals of both the HIV/AIDS programme (n=5) and the DHMT 19 (76.0%) as barriers. Lack of pharmacy personnel at the PHC clinics of CHAL is considered as a barrier by healthcare professionals of the HIV/AIDS programme (n=5) and the DHMT 14 (54.0%) levels. The results indicate that lack of shared planning on the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines is

considered as a barrier by healthcare professionals at the DHMT 14 (54.0%); however, all healthcare professionals at HIV/AIDS programme disagreed.

Personnel factors are assessed at the PHC facilities between PHC managers and healthcare professionals.

Table 3-20 presents the results of personnel factors that may influence the implementation of HIV/AIDS treatment guidelines at PHC facilities.

Table 3-20: Personnel factors that may influence HIV/AIDS treatment guidelines implementation at PHC facilities

		PHC facilities		
Personnel factors	**Response**	**PHC managers (N=87)* (%)**	**Healthcare professionals (N=29)* *n*(%)**	***p*-value (Cramer's *V*)**
Lack of nurses and medical practitioners at the hospitals of MOH	Agree	60(69.8)	11(37.9)	0.012 (0.356)
	Neutral	8 (9.3)	10(34.5)	
	Disagree	18(20.9)	8(27.6)	
Lack of nurses and medical practitioners at the hospitals of CHAL	Agree	56(64.3)	12(41.4)	0.056
	Neutral	9(8.1)	10 (34.5)	
	Disagree	22(25.3)	7(24.1)	
Lack of nurses and medical practitioners at the PHC clinics of MOH	Agree	56(64.3)	18(66.7)	0.428
	Neutral	14(16.1)	4(14.8)	
	Disagree	17(19.5)	5(18.5)	
Lack of nurses and medical practitioners at the PHC clinics of CHAL	Agree	51(60.0)	17(58.6)	0.149
	Neutral	14(16.5)	8(27.6)	
	Disagree	20(23.5)	4(13.8)	
Lack of pharmacy personnel at the hospitals of MOH	Agree	46(54.1)	16(55.2)	0.947
	Neutral	20(23.6)	6(20.7)	
	Disagree	19(22.4)	7(24.1)	
Lack of pharmacy personnel at the hospitals of CHAL	Agree	48(57.1)	15(51.7)	0.838
	Neutral	14(16.7)	7(24.1)	
	Disagree	22(26.2)	7(24.1)	
Lack of pharmacy personnel at the PHC clinics of MOH	Agree	56(65.9)	19(65.5)	0.805
	Neutral	15(17.6)	3(10.4)	
	Disagree	14(16.5)	7(24.1)	
Lack of pharmacy personnel at the PHC clinics of CHAL	Agree	58(67.4)	18(62.1)	0.872
	Neutral	14(16.3)	4(13.8)	
	Disagree	14(16.3)	7(24.1)	
Lack of shared planning at the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines	Agree	51(58.6)	16(55.2)	0.471
	Neutral	17(19.5)	7(24.1)	
	Disagree	19(21.8)	6(20.7)	
The reluctance of healthcare professionals to assume responsibility	Agree	49(57.0)	11(37.9)	0.130
	Neutral	9(10.5)	9(31.0)	
	Disagree	28(32.6)	9(31.0)	
Fear of change to daily responsibilities	Agree	46(53.5)	13(44.8)	0.699
	Neutral	14(16.3)	5(17.2)	
	Disagree	26(30.2)	11(37.9)	

*Not all the healthcare professionals responded.

The results in Table 3-20 show that both PHC managers 56 (64.3%) and healthcare professionals 18 (66.7%) agree that the lack of nurses and medical practitioners at the PHC clinics of MOH is a barrier to implementation of HIV/AIDS treatment guidelines. Lack of nurses and medical practitioners at the PHC clinics of CHAL is also considered a barrier by PHC managers 51 (60.0%) and healthcare professionals 17 (58.6%). The lack of pharmacy personnel at the PHC clinics of MOH is regarded as a treatment guideline implementation barrier by PHC managers 56 (65.9%) and healthcare professionals 19 (65.5%). Lack of pharmacy personnel at the PHC clinics of CHAL is also considered a barrier by PHC manager 58 (67.4%) and healthcare professionals 18 (62.1%).

Lack of shared planning for the implementation of new HIV/AIDS treatment guidelines on the HIV/AIDS programme level is considered as a barrier by PHC managers 51 (58.6%) and healthcare professionals 16 (55.2%). The results also indicate that PHC managers considered lack of nurses and medical practitioners in hospitals of MOH 60 (69.8%), lack of nurses and medical practitioners in hospitals of CHAL 56 (64.3%) and reluctance of by healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines 49 (57.0%) as barriers to implementation (refer to Table 3-20).

According to the results presented in Table 3-20, the Chi-square test (x^2) and Cramér's V value indicate no statistically significant association between opinions of PHC managers and healthcare professionals at PHC facilities for most of the personnel factors, except for the lack of nurses and medical practitioners in hospitals of MOH. This shows a statistically significant association between the agreement opinion of PHC managers and healthcare professionals (p=0.012, Cramér's V=0.356), which means that a higher percentage of PHC managers than healthcare professionals believe that it is a barrier.

Table 3-21 presents the comparison of PHC managers' opinions regarding personnel factors and PHC managers' gender.

Table 3-21: Comparison of personnel factors and PHC managers' gender

Factor	Agreement level		*p*-value	Cramér's *V*
	Gender	**N***		
Lack of nurses and medical practitioners at the PHC clinics of CHAL	Male	11	0.042	0.364
	Female	40		
Lack of pharmacy personnel at the hospitals of MOH	Male	9	0.000	0.536
	Female	37		
Lack of pharmacy personnel at the hospitals of CHAL	Male	8	0.021	0.391
	Female	40		
Lack of pharmacy personnel at the PHC clinics of MOH	Male	9	0.020	0.391
	Female	47		
Lack of pharmacy personnel at the PHC clinics of CHAL	Male	9	0.032	0.375
	Female	49		

*Male N=16, Female N=71

The results show that there were more females who agreed that the lack of personnel factors, as shown in Table 3-21, were barriers than males. The Chi-square test was used to determine the statistical significance of the opinion of females against that of males (who were PHC managers) regarding the lack of personnel at the MOH and CHAL PHC facilities. The results show statistical significance in the opinion of males and females about all the factors in Table 3-21 (p=0.042, p=0.000, p=0.021, p=0.020, and p=0.032). Cramér's V confirmed a medium effect or practically visible association of opinions of males and females who were PHC managers (Cramér's V=0.364, Cramér's V=0.536 and Cramér's V=0.391, Cramér's *V=0.391 and* Cramér's *V=0.375*). The opinion of females against that of males regarding a lack of pharmacy personnel at the hospitals of MOH showed a practically significant association, suggesting a large difference in opinion regarding this matter.

Table 3-22 compares the mean agreement scores of PHC managers and healthcare professionals at PHC facilities regarding personnel factors affecting HIV/AIDS treatment guidelines implementation.

Table 3-22: Mean agreement score for personnel factors reported by PHC managers and healthcare professionals at PHC facilities

Personnel factors	Agreement score		*p*-value (Cohen's *d*-value)
	PHC managers (n=87)	Healthcare professionals (n=29)	
	Mean (SD)	Mean (SD)	
Lack of nurses and medical practitioners at the hospitals of MOH	3.66(1.41)	3.21(1.26)	0.455
Lack of nurses and medical practitioners at the hospitals of CHAL	3.54(1.41)	3.21(1.18)	0.107
Lack of nurses and medical practitioners at the PHC clinics of MOH	3.69(1.32)	3.66(1.14)	0.198
Lack of nurses and medical practitioners at the PHC clinics of CHAL	3.48(1.47)	3.52(1.06)	0.010 (0.03)
Lack of pharmacy personnel at the hospitals of MOH	3.43(1.33)	3.45(1.30)	0.884
Lack of pharmacy personnel at the hospitals of CHAL	3.41(1.52)	3.45(1.33)	0.228
Lack of pharmacy personnel at the PHC clinics of MOH	3.74(1.29)	3.72(1.33)	0.667
Lack of pharmacy personnel at the PHC clinics of CHAL	3.78(1.30)	3.69(1.34)	0.551
Lack of shared planning at the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines	3.61(1.26)	3.69(1.26)	0.869
Reluctance of healthcare professionals to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	3.38(1.37)	3.21(1.15)	0.057
Fear of change to daily responsibilities	3.30(1.34)	3.24(1.33)	0.586

In Table 3-22, the results of the two-sample *t*-test procedure and the effect size of Cohen (*d*) show that no statistical and practical significance differences exist between the opinion of the PHC managers and healthcare professionals – except for lack of nurses and medical practitioners at the PHC clinics of CHAL with mean agreement scores of 3.48(±1.47) and 3.52(±1.06), respectively, and a *p*-value of 0.01 indicating statistical significance difference between the mean agreement scores. However, the difference is not practically significant.

The discussion of personnel barriers affecting the implementation of HIV/AIDS treatment guidelines is centred on lack of pharmacy personnel at the PHC clinics of MOH and CHAL

as expressed by healthcare professionals at all levels (refer to Tables 3-19, 3-120, 3-21 and 3-22). In the study conducted by Uebel *et al*. (2011:86) lack or shortage of pharmacists and pharmacy assistants was identified as a problem as ARVs are classified as medicines that may only be dispensed by pharmacists. Task shifting together with relevant training and legislation were also considered and addressed (Uebel *et al*., 2011:86).

Damschroder *et al*. (2009:50) state that local barriers to the implementation of innovation or guidelines need to be identified. Lack of shared planning on the HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines is an important factor that is identified as a barrier by the healthcare personnel from the DHMT, PHC managers and healthcare professionals but not from the HIV/AIDS programme. The results presented in Table 3-5 indicates that very few healthcare professionals at the DHMT and PHC facilities acknowledged the presence of an implementation plan for 2016 HIV/AIDS treatment guidelines.

3.7.2 Knowledge and competency factors affecting the implementation of HIV/AIDS treatment guidelines

Knowledge and competency factors include insufficient education, training and clinical knowledge; inadequate communication skills; poor time management; insufficient organisational and management skills and being unaccustomed to document outcomes of HIV/AIDS treatment guidelines (WHO, 2013:15). Table 3-23 presents the perspective of healthcare professionals regarding knowledge and competency factors that may affect HIV/AIDS treatment guidelines implementation at the HIV/AIDS programme and the DHMT.

Table 3-23: Knowledge and competency factors affecting the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and DHMT levels

Knowledge and competency factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N =27)* *n(%)*
Insufficient education and training	Agree	0	10(40.0)
	Neutral	1	3(12.0)
	Disagree	4	12(48.0)

Knowledge and competency factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N =27)* *n(%)*
Insufficient clinical knowledge and skills	Agree	2	10(38.4)
	Neutral	1	3(11.5)
	Disagree	2	12(46.2)
Inadequate communication skills	Agree	2	15(57.7)
	Neutral	2	3(11.5)
	Disagree	1	8(30.8)
Poor time management	Agree	1	22(84.6)
	Neutral	3	1(3.9)
	Disagree	1	3(11.5)
Insufficient organisational skills	Agree	1	22(84.6)
	Neutral	3	2(7.7)
	Disagree	1	2(7.7)
Insufficient management skills	Agree	3	21(80.8)
	Neutral	1	1(3.9)
	Disagree	1	4(15.4)
Being unaccustomed to document outcomes of HIV/AIDS treatment guidelines	Agree	4	16(61.5)
	Neutral	1	4(15.4)
	Disagree	0	6(23.0)

*Not all the healthcare professionals responded.

The results show that healthcare professionals at the DHMT considered poor time management 22 (84.6%), insufficient organisational skills 22 (84.6%), insufficient management skills 21 (80.8%), and inadequate communication skills 15 (57.7%) as barriers. The healthcare professionals at the HIV/AIDS programme (n=4) and the DHMT 16 (61.5%) indicate that being unaccustomed to document outcomes of HIV/AIDS treatment guidelines as barriers to the implementation of HIV/AIDS treatment guidelines (refer to Table 3-23).

Knowledge and competency factors affecting the implementation of HIV/AIDS treatment guidelines as reported by the PHC managers and healthcare professionals are presented in Table 3-24.

Table 3-24: Knowledge and competency factors that affect the implementation of HIV/AIDS treatment guidelines at PHC facilities

		PHC facilities		
Knowledge and competency barriers	**Response**	**PHC managers (N=87)* *n*(%)**	**Healthcare professionals (N=29)* *n*(%)**	***p*-value (Cramér's *V*)**
Insufficient education and training	Agree	50(58.1)	10(34.5)	0.348
	Neutral	10(11.6)	6(20.7)	
	Disagree	26(30.2)	13(44.8)	
Insufficient clinical knowledge and skills	Agree	48(55.8)	13(46.4)	0.520
	Neutral	13(15.1)	5(17.9)	
	Disagree	25(29.1)	10(35.7)	
Inadequate communication skills	Agree	48(55.8)	12(41.4)	0.667
	Neutral	17(19.8)	7(24.1)	
	Disagree	21(24.4)	10(34.5)	
Poor time management	Agree	52(60.5)	14(48.3)	0.517
	Neutral	11(12.8)	8(27.6)	
	Disagree	23(26.7)	7(24.1)	
Insufficient organisational skills	Agree	51(59.3)	12(41.4)	0.082
	Neutral	11(12.8)	9(31.0)	
	Disagree	24(27.9)	8(27.6)	
Insufficient management skills	Agree	52(60.5)	17(58.6)	0.932
	Neutral	14(16.3)	4(13.8)	
	Disagree	20(23.3)	8(27.6)	
Being unaccustomed to document outcomes of HIV/AIDS treatment guidelines	Agree	42(48.8)	16(55.2)	0.963
	Neutral	15(17.4)	4(13.8)	
	Disagree	29(33.9)	9(31.0)	

*Not all the healthcare professionals responded

The results in Table 3-24 show that healthcare professionals at the PHC facilities consider insufficient management skills 17 (58.6%) and being unaccustomed to document outcomes of HIV/AIDS treatment guidelines 16 (55.2%) as barriers affecting HIV/AIDS treatment guidelines implementation. The PHC managers agree that insufficient education and training 50 (58.1%) and insufficient clinical knowledge and skills 48 (55.6%) are barriers to HIV/AIDS treatment guidelines implementation. The results also show that PHC managers regard poor time management 52 (60.5%), insufficient organisational

skills 51 (59.3%) and insufficient management skills 52 (60.5%) as potential barriers to HIV/AIDS treatment guideline implementation.

This section compares the responses of PHC managers and healthcare professionals – regarding knowledge and competency factors as potential barriers to HIV/AIDS treatment guideline implementation – by using the mean agreement scores.

Table 3-25 presents the mean agreements score of PHC managers and healthcare professionals' knowledge and competency factors that may affect the implementation of the HIV/AIDS treatment guidelines. The two-sample *t*-test procedure and the effect size of Cohen (*d*) indicated no statistically significant difference in opinions of the PHC managers and healthcare professionals at PHC facilities.

Table 3-25: Mean agreement score reported by PHC managers and healthcare professionals for knowledge and competency factors affecting HIV/AIDS treatment guidelines

Knowledge and competency factors	Agreement score		*p*-value (Cohen's *d*-value)
	PHC managers (N=87)	Healthcare professionals (N=29)	
	Mean (SD)	Mean (SD)	
Insufficient education and training	3.30(1.43)	2.83(1.37)	0.562
Insufficient clinical knowledge and skills	3.31(1.42)	2.93(1.31)	0.498
Inadequate communication skills	3.43(1.34)	3.03(1.40)	0.980
Poor time management	3.41(1.31)	3.38(1.21)	0.477
Insufficient organisational skills	3.29(1.28)	3.28(1.22)	0.592
Insufficient management skills	3.46(1.29)	3.48(1.27)	0.964
Unaccustomed to document outcomes of HIV/AIDS treatment guidelines	3.18(1.32)	3.38(1.35)	0.805

3.7.3 Resource-related factors affecting the implementation of HIV/AIDS treatment guidelines

Resource-related factors include lack of integrated health information systems, lack of time, lack of technology, lack of funds to acquire highly technologic health information systems, lack of drug information systems, lack of relevant and current reference books,

lack of support by non-government organisations, lack of well-designed implementation research to support decisions and no access to reliable internet or email services (de Brún *et al.,* 2016:346; Taba *et al*., 2012; WHO, 2013:47). Table 3-26 presents the perspective of healthcare professionals regarding the resource-related factors that may affect the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT.

Table 3-26: Resource factors affecting the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT

Resource factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n(%)*
Lack of integrated health information systems for storing and retrieving data	Agree	1	11(42.3)
	Neutral	1	1(3.9)
	Disagree	3	14(54.0)
Lack of time	Agree	0	10(38.4)
	Neutral	1	4(15.4)
	Disagree	4	12(46.2)
Lack of technology (such as computers)	Agree	2	11(42.3)
	Neutral	2	4(15.4)
	Disagree	1	11(42.3)
No or unreliable internet access	Agree	4	21(80.8)
	Neutral	0	3(11.5)
	Disagree	1	2(7.7)
No or unreliable e-mail services	Agree	4	13(50.0)
	Neutral	0	6(23.0)
	Disagree	1	6(23.0)
Lack of funds to acquire highly technologic health information systems	Agree	4	13(50.0)
	Neutral	0	5(19.2)
	Disagree	1	8(30.8)
Lack of drug information systems	Agree	2	12(46.2)
	Neutral	0	4(15.4)
	Disagree	3	10(38.4)
Lack of relevant and current reference books	Agree	1	11(42.3)
	Neutral	1	1(3.9)
	Disagree	3	14(54.0)
	Agree	1	9(34.6)

Resource factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n(%)*
Lack of support by non-government organisations	Neutral	2	0(0.0)
	Disagree	2	17(65.4)
Lack of well-designed implementation research to support decisions	Agree	4	16(61.5)
	Neutral	0	2(7.7)
	Disagree	1	8(30.8)

*Not all the healthcare professionals responded

The results in Table 3-26 indicate that DHMT healthcare professionals disagree that lack of integrated health information systems for storing and retrieving of data (n=14, 54.0%), lack of relevant and current reference books (n=14, 54.0%) and lack of support by non-government organisations 17 (65.4%) are barriers to the implementation of HIV/AIDS treatment guidelines. Both HIV/AIDS programme and DHMT healthcare professionals indicate that no or unreliable internet access (n=4) and 21 (80.8%), respectively, no or unreliable e-mail services (n=4) and 13, (50.0%), respectively; lack of funds to acquire high technological health information systems (n=4) and 13 (50.0%), respectively; and lack of well-designed implementation research to support decisions (n=4) and 16 (61.5%), respectively, are barriers to implementation. HIV/AIDS programme level healthcare professionals (n=4) also disagree that lack of time is a barrier.

Table 3-27 presents the results of the PHC facilities level regarding resource-related factors that influence the implementation of HIV/AIDS treatment guidelines.

Table 3-27: Resource-related factors that affect the implementation of HIV/AIDS treatment guidelines in PHC facilities

		PHC facilities		
Resource factors	**Response**	**PHC managers (N=87)* *n*(%)**	**Healthcare professionals (N=29)* *n*(%)**	***p*-value (Cramér's *V*)**
Lack of integrated health information systems for storing and retrieving data	Agree	47(54.7)	17(60.7)	0.818
	Neutral	14(16.3)	4(14.3)	
	Disagree	25(29.1)	7(25.0)	
Lack of time	Agree	40(47.1)	17(58.6)	0.632
	Neutral	14(16.5)	5(17.2)	
	Disagree	31(36.5)	7(24.1)	

		PHC facilities		
Resource factors	**Response**	**PHC managers (N=87)* *n*(%)**	**Healthcare professionals (N=29)* *n*(%)**	***p*-value (Cramér's *V*)**
Lack of technology (such as computers)	Agree	45(52.3)	17(58.6)	0.501
	Neutral	13(15.1)	1(3.4)	
	Disagree	28(32.6)	11(37.9)	
No or unreliable internet access	Agree	49(56.9)	16(55.2)	0.856
	Neutral	12(13.9)	3(10.3)	
	Disagree	25(29.1)	10(34.5)	
No or unreliable e-mail services	Agree	46(54.1)	13(44.8)	0.970
	Neutral	16(18.8)	6(20.7)	
	Disagree	23(27.1)	8(27.6)	
Lack of funds to acquire highly technologic health information systems	Agree	51(59.3)	17(58.6)	0.903
	Neutral	16(18.6)	4(13.8)	
	Disagree	19(22.1)	8(27.6)	
Lack of drug information systems	Agree	45(52.3)	13(44.8)	0.766
	Neutral	18(20.9)	10(34.5)	
	Disagree	23(26.7)	7(24.1)	
Lack of relevant and current reference books	Agree	42(48.8)	16(55.2)	0.947
	Neutral	12(14.0)	3(10.3)	
	Disagree	32(37.2)	10(34.5)	
Lack of support by non-government organisations	Agree	38(44.7)	12(42.9)	0.165
	Neutral	7(8.2)	7(25.0)	
	Disagree	40(47.1)	9(32.1)	
Lack of well-designed implementation research to support decisions	Agree	39(47.0)	13(36.4)	0.441
	Neutral	16(19.3)	7(25.0)	
	Disagree	28(33.7)	8(28.6)	

*Not all the healthcare professionals responded

The results in Table 3-27 reveal that PHC managers and healthcare professionals acknowledged lack of integrated health information systems for storing and retrieving of data 47 (54.7%), and 17 (60.7%), respectively; and lack of technology (e.g. computers) 45 (52.3%) and 17 (58.6%), respectively, as barriers to the implementation of HIV/AIDS treatment guidelines. The PHC managers and healthcare professionals also agreed that no or unreliable internet access 49 (56.9%) and16 (55.2%), respectively; and lack of funds to acquire high technological health information systems 51 (59.3%) and 17 (58.6%)

respectively, are barriers. Lack of time 17 (58.2%) and lack of relevant and current reference books 16 (55.6%) are recognised as barriers by PHC healthcare professionals only.

In Table 3-27, the Chi-square test and Cramér's *V* value indicate no significant difference in opinions of the PHC managers and healthcare professionals at PHC facilities ($p>0.05$) regarding resource-related factors.

The mean agreement scores are used for presenting the results of PHC managers and healthcare professionals regarding resource-related factors that may affect the implementation of HIV/AIDS treatment guidelines at the PHC facilities. Table 3-28 presents these results.

Table 3-28: Mean agreement score of PHC managers and healthcare professionals for resource-related factors that affect the implementation of HIV/AIDS treatment guidelines at PHC facilities

	PHC facilities		
Resource-related factors	**PHC managers (N=87)**	**Healthcare professionals (N=29)**	***p*-value (Cohen's *d*-value)**
	Mean (SD)	**Mean (SD)**	
Lack of integrated health information systems for storing and retrieving data	3.34(1.35)	3.38(1.45)	0.771
Lack of time	3.06(1.42)	3.38(1.20)	0.172
Lack of technology (such as computers)	3.28(1.41)	3.31(1.37)	0.946
No or unreliable internet access	3.45(1.10)	3.31(1.34)	0.751
No or unreliable e-mail services	3.36(1.39)	3.41(1.35)	0.851
Lack of funds to acquire highly technologic health information systems	3.66(1.29)	3.55(1.33)	0.830
Lack of drug information systems	3.40(1.41)	3.31(1.29)	0.283
Lack of relevant and current reference books	3.17(1.41)	3.28(1.39)	0.870
Lack of support by non-government organisations	2.89(1.56)	2.98(1.35)	0.029 0.10
Lack of well-designed implementation research to support decisions	3.10(1.36)	3.21(1.52)	0.438

In Table 3-28, the results of the two-sample *t*-test procedure and the effect size of Cohen (d) show no statistically and practically significant differences between the opinion of the

PHC managers and that of the healthcare professionals. Lack of support by non-government organisations with mean agreement scores of 2.89(±1.56) for PHC managers and 2.98(±1.35) for healthcare professionals were identified, which indicate statistical significance difference (p<0.05) between the mean agreement scores, however, the difference is not practically significant. Therefore, there is no practical difference between the agreement score of PHC managers and healthcare professionals.

Healthcare professionals at the PHC facilities identified that lack of time was one of the barriers that affect them while implementing HIV/AIDS treatment guidelines. Taba *et al.* (2012) identified lack of time to implement guidelines recommendations is a barrier. Scurlock-Evans *et al*. (2014:208) also list lack of time as a barrier.

3.7.4 Financially related factors affecting the implementation of HIV/AIDS treatment guidelines

Financial factors include lack of budget for new HIV/AIDS treatment guidelines implementation, training of personnel and new posts for healthcare personnel (Uwimana *et al.,* 2012:662).

Table 3-29 presents the results of the opinions of healthcare personnel at the HIV/AIDS programme and the DHMT levels regarding financial factors that may affect the implementation of HIV/AIDS treatment guidelines.

Table 3-29: Financially-related factors that may affect the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT

Financially-related factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n*(%)
Lack of budget for new HIV/AIDS treatment guidelines implementation	Agree	1	12(46.2)
	Neutral	0	5(19.2)
	Disagree	4	9(34.6)
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	Agree	2	18(69.2)
	Neutral	0	1(3.9)
	Disagree	3	7(26.9)
Lack of budget for new posts for healthcare personnel	Agree	3	24(92.3)
	Neutral	2	2(7.7)
	Disagree	0	0(0.0)

*Not all the healthcare professionals responded

Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation 18 (69.2%) and lack of budget for new posts for healthcare personnel 24 (92.3%) are acknowledged as barriers by DHMT healthcare professionals. HIV/AIDS programme healthcare professionals (n=4) disagreed that the lack of budget for new HIV/AIDS treatment guidelines implementation is a barrier (refer to Table 3-29).

Table 3-30 presents the financial-related resources that may influence the implementation of HIV/AIDS treatment guidelines at the PHC facilities. Table 3-30 presents the opinions of PHC managers and healthcare professionals.

Table 3-30: Financially-related factors that may affect the implementation of HIV/AIDS treatment guidelines at PHC facilities

		PHC level		
Financially-related factors	**Response**	**PHC managers (N=87)* *n*(%)**	**Healthcare professionals (N=29)* n(%)**	***p*-value (Cramer's *V*)**
Lack of budget for new HIV/AIDS treatment guidelines implementation	Agree	51(61.5)	15(53.6)	0.441
	Neutral	12(14.4)	5(17.8)	
	Disagree	20(24.0)	8(28.6)	
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	Agree	52(61.9)	12(46.2)	0.967
	Neutral	16(19.1)	6(23.1)	
	Disagree	16(19.1)	8(30.8)	
Lack of budget for new posts for healthcare personnel	Agree	60(71.4)	14(51.9)	0.165
	Neutral	11(13.1)	5(18.5)	
	Disagree	13(15.5)	8(29.6)	

*Not all the healthcare professionals responded

Both PHC managers 51 (61.5%) and healthcare professionals 15 (53.6%) indicated that the lack of budget for new HIV/AIDS treatment guidelines implementation is a barrier. Lack of budget for new posts for healthcare personnel was also considered a barrier by both the PHC managers 60 (71.4%) and healthcare professionals 14 (51.9%). PHC managers 52 (61.9%), however, considered lack of a budget for training of personnel as a barrier to new HIV/AIDS treatment guidelines implementation(refer to Table 3-30).

In Table 3-30, the Chi-square test and Cramér's *V* value indicate that the opinions of PHC managers and healthcare professionals did not differ regarding financially-related factors as possible barriers that may affect the implementation of treatment guidelines at PHC facilities ($p>0.05$).

Table 3-31 presents the results of mean agreement score reported by PHC managers and healthcare professionals for financial-related factors that may influence the implementation of treatment guidelines at PHC facilities

Table 3-31: Mean agreement score reported by PHC managers and healthcare professionals for financial-related factors that may affect the implementation of treatment guidelines at PHC facilities.

Resource-related factors	Agreement score		*p*-value (Cohen's *d*-value)
	PHC managers (N=87)	Healthcare professionals (N=29)	
	Mean (SD)	Mean (SD)	
Lack of budget for new HIV/AIDS treatment guidelines implementation	3.37(1.28)	3.17(1.28)	0.961
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	3.57(1.28)	3.34(1.40)	0.400
Lack of budget for new posts for healthcare personnel	3.79(1.24)	3.17(154)	0.062

In Table 3-31, the results of the two-sample *t*-test procedure and the effect size Cohen (d) show no statistically and practically significant differences *(p*>0.05) in the opinions of the PHC managers and healthcare professionals regarding financial factors that may affect the implementation of treatment guidelines at PHC clinics.

The result show that HIV/AIDS programme healthcare professionals (n=4) disagreed that the lack of budget for new HIV/AIDS treatment guidelines implementation is a barrier, and lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation (n=3), yet training healthcare professionals did not cover all healthcare professionals at the DHMT and PHC facilities. However, the healthcare professionals at all levels and PHC facilities agreed that lack of budget for new posts for healthcare personnel is a barrier. In the study of Taba *et al*. (2012:455) it was indicated that both human and financial resources are needed for implementation of treatment guidelines.

3.7.5 System-related factors affecting the implementation of HIV/AIDS treatment guidelines

System-related factors include fragmentation of the healthcare system, lack of good practice standards, lack of task agreements and performance evaluation criteria, poor coordination of activities by the managers, shortage of mentors and role models to encourage healthcare professionals to be innovative, management-related problems, lack

of suitable drugs (ARV regimens included) in the country, and lack of skills in medicine chain supply management (Uwimana *et al.,* 2012:663; WHO, 2001:15).

Table 3-32 presents the results of system-related factors that may affect the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and DHMT.

Table 3-32: System-related factors that may affect the implementation of HIV/AIDS treatment guidelines at the HIV/AIDS programme and the DHMT

System-related factors	Response	HIV/AIDS programme (N=5) *n*	DHMT (N=27)* *n*(%)
Fragmentation of the healthcare system	Agree	0	17(65.4)
	Neutral	2	3(11.5)
	Disagree	3	6(23.0)
Lack of good practice standards	Agree	0	19(73.1)
	Neutral	3	1(3.9)
	Disagree	2	6(23.0)
Lack of task agreements and performance evaluation criteria	Agree	0	14(54.0)
	Neutral	4	7(26.9)
	Disagree	1	5(19.2)
Poor activities coordination by managers	Agree	3	21(80.8)
	Neutral	0	2(7.7)
	Disagree	2	3(11.5)
Shortage of mentors and role models to encourage healthcare professionals to be innovative	Agree	4	18(69.2)
	Neutral	1	3(11.5)
	Disagree	0	5(19.2)
Management-related problems	Agree	3	19(73.1)
	Neutral	2	2(7.7)
	Disagree	0	5(19.2)
Lack of suitable drugs (ARV regimens included) in the country	Agree	0	5(19.2)
	Neutral	1	4(15.4)
	Disagree	4	17(65.4)
Lack of skills in medicine chain supply management	Agree	1	4(15.4)
	Neutral	1	4(15.4)
	Disagree	3	18(69.2)

*Not all the healthcare professionals responded

The results in Table 3-32 reveal that the healthcare professional at the HIV/AIDS programme failed to express their opinion on whether the system-related factors are barriers or not. DHMT healthcare professionals perceived the fragmentation of the healthcare system 17 (65.4%) as a barrier. It is also indicated that lack of good practice standards 19 (73.1%) and lack of task agreements and performance evaluation criteria 14 (54.0%) are barriers identified by those working at the DHMT. DHMT healthcare professionals agreed that poor coordination of activities by the HIV/AIDS managers 21 (80.8%) is a barrier.

Management-related problems 19 (73.1%) were identified as barriers by only DHMT healthcare professionals. DHMT and HIV/AIDS programme level healthcare professionals do not consider lack of suitable drugs (ARV regimens included) in the country 17 (65.4% and n=3, respectively) and lack of skills in medicine chain supply management 18 (69.2% and n=4, respectively) as barriers (refer to Table 3-32).

Table 3-33 presents the results of system-related factors that may affect the implementation of HIV/AIDS treatment guidelines, as reported by both PHC managers and healthcare professionals.

Table 3-33: System-related factors that may affect the implementation of HIV/AIDS treatment guidelines at PHC facilities

		PHC facilities		
System-related factors	**Response**	**PHC managers (N=87)* *n*(%)**	**Healthcare professionals (N=29)* *n*(%)**	***p*-value (Cramér's *V*)**
Fragmentation of healthcare system	Agree	43(51.2)	15(53.6)	0.967
	Neutral	23(27.4)	5(17.8)	
	Disagree	18(21.4)	8(28.6)	
Lack of good practice standards	Agree	45(53.5)	19(67.9)	0.724
	Neutral	14(16.7)	2(7.1)	
	Disagree	25(29.8)	7(25.0)	
Lack of task agreements and performance evaluation criteria	Agree	44(52.4)	13(50.0)	0.171
	Neutral	15(17.9)	8(30.8)	
	Disagree	25(29.8)	5(19.2)	
Poor activities coordination by managers	Agree	44(52.4)	17(60.1)	0.756
	Neutral	16)19.1)	3(10.7)	
	Disagree	24(28.6)	8(28.6)	
Shortage of mentors and role models to encourage healthcare professionals to be innovative	Agree	40((47.6)	14(50.0)	0.991
	Neutral	22(26.2)	7(250)	
	Disagree	22(26.2)	7(25.0)	
Management-related problems	Agree	35(41.7)	16(57.1)	0.326
	Neutral	19(22.6)	6(21.4)	
	Disagree	30(35.7)	6(21.4)	
Lack of suitable drugs (ARV regimens included) in the country	Agree	19(22.6)	7(25.0)	0.887
	Neutral	14(16.7)	4(14.3)	
	Disagree	51(60.7)	17(60.1)	
Lack of skills in medicine chain supply management	Agree	20(23.8)	11(39.3)	0.659
	Neutral	14(16.7)	3(10.7)	
	Disagree	50(59.5)	14(50.0)	

*Not all the healthcare professionals responded

The results in Table 3-33 show that both PHC managers and healthcare professionals indicated that fragmentation of healthcare system 43 (51.2% and 15 (53.6%, respectively), lack of good practice standards 45 (53.5% and 19 (67.9%, respectively), and poor

coordination of activities by the managers 44 (52.4% and17 (60.1%, respectively) are barriers to the implementation of HIV/AIDS treatment guidelines.

PHC managers and healthcare professionals do not consider lack of suitable drugs (ARV regimens included) in the country 51 (60.7% and 17 (60.1%, respectively) and lack of skills in medicine chain supply management 50 (59.5% and 14 (50.0%, respectively) as barriers (refer to Table 3-33).

According to the results in Table 3-33, the Chi-square test and Cramér's *V*-value indicate no statistically and practically significant difference in opinion about system-related factors between the PHC managers and healthcare professionals at PHC facilities. However, if the opinions of PHC managers regarding system-related factors are stratified by gender and the highest level of education attained, statistically significant associations were found ($p< 0.05$), as reflected in Table 3-34 and Table 3-35 (please note that the results should be taken with caution due to small sample size)

Table 3-34 presents the results of the Chi-square test and Cramér's *V*-value regarding the influence of PHC managers' gender on their opinions regarding the system-related factors: a) fragmentation of healthcare system (p=0.023, Cramér's V=0.389), and b) shortage of mentors and role models to encourage healthcare professionals to be innovative (p=0.009; Cramér's V=0.423). The results reveal that there is a statistically significant and practically visible association between the gender of the PHC managers and their opinions regarding the two system-related factors, suggesting that the opinion of males differ from those of females.

Table 3-34: Gender of PHC managers and system-related factors affecting the implementation of HIV/AIDS treatment guidelines

Factor	Gender agreement level (n)		*p*-value	Cramér's *V*
Fragmentation of healthcare system	Male	3	0.023	0.389
	Female	40		
Shortage of mentors and role models to encourage healthcare professionals to be innovative	Male	4	0.009	0.423
	Female	36		

Table 3-35 presents the results of the highest level of education of PHC managers and system-related factors affecting implementation of HIV/AIDS treatment guidelines.

According to the results, PHC managers' qualifications have an influence on their opinions regarding the following system-related factors as barriers to the implementation of HIV/AIDS treatment guidelines: a) poor coordination of activities by the managers (p=0.028, Cramér's V=0.315), and b) the shortage of mentors and role models to encourage healthcare professionals to be innovative (p=0.024, Cramér's V=0.318). The results reveal statistical significance associations which are also practically visible associations.

Table 3-35: The highest level of education of PHC managers and system-related factors affecting the implementation of HIV/AIDS treatment guidelines

Factor	Qualification agreement level (n)		*p*-value	Cramér's *V*
Shortage of mentors and role models to encourage health professionals to be innovative	Diploma	20	0.024	0.318
	Degree	0		
	Professional degree	18		
Poor coordination of activities by managers	Diploma	26	0.028	0.315
	Degree	0		
	Professional degree	12		

PHC managers had their highest level of education completed as a diploma, and there was a difference of opinion between those who had a diploma, degree and professionals degree. The results in Table 3-36 shows both statistical significance and practically visible associations regarding the opinion of PHC managers with different qualifications against shortage of mentors and role models to encourage health professionals to be innovative (p=0.024 and Cramér's V=0.376) and poor coordination of activities by managers (p=0028, Cramér's V= 0.315).

Table 3-36: Mean agreement scores reported by PHC managers and healthcare professionals regarding system-related factors affecting the implementation of HIV/AIDS treatment guidelines at PHC facilities

System-related factors	PHC managers (N=87)	Healthcare professionals (N=29)	*p*-value/ *d–value*
	Mean (SD)	Mean (SD)	
Fragmentation of healthcare system	3.30(1.17)	3.14(1.43)	0.139
Lack of good practice standards	3.21(1.38)	3.48(1.48)	0.736
Lack of task agreements and performance evaluation criteria	3.17(1.33)	3.14(1.53)	0.703
Poor activities coordination by managers	3.26(1.34)	3.41(1.38)	0.809
Shortage of mentors and role models to encourage healthcare professionals to be innovative	3.28(1.31)	3.24(1.33)	0.939
Management-related problems	3.01(1.30)	3.48(1.43)	0.413
Lack of suitable drugs (ARV regimens included) in the country	2.43(1.34)	2.41(1.52)	0.326
Lack of skills in medicine chain supply management	2.45(1.40)	2.83(1.54)	0.311

In Table 3-36, the results of the two-sample *t*-test procedure and the effect size of Cohen (*d*) show that no statistically and practically significant differences exist between the opinions of the PHC managers and healthcare professionals regarding system-related factors.

The results regarding system related factors showed a clear disagreement pattern among all healthcare professionals at the HIV/AIDS programme, DHMT and PHC where they all disagreed that lack of suitable drugs ARV regimens included) in the country and lack of skills in medicine chain supply management were barriers. The study of Uwimana *et al*. (2012) showed similar results regarding health systems barriers include challenges related to structure and organisational culture; management, planning and power issues; unequal financing; and human resource capacity. DHMT healthcare professionals agreed that poor coordination of activities by the HIV/AIDS managers (n=21, 80.8%) is a barrier.

3.7.6 Summary of key findings of barriers identified at the different levels

The following sections illustrate barriers to the implementation of the HIV/AIDS treatment guidelines at the three different levels.

3.7.6.1 Barriers identified at the HIV/AIDS programme

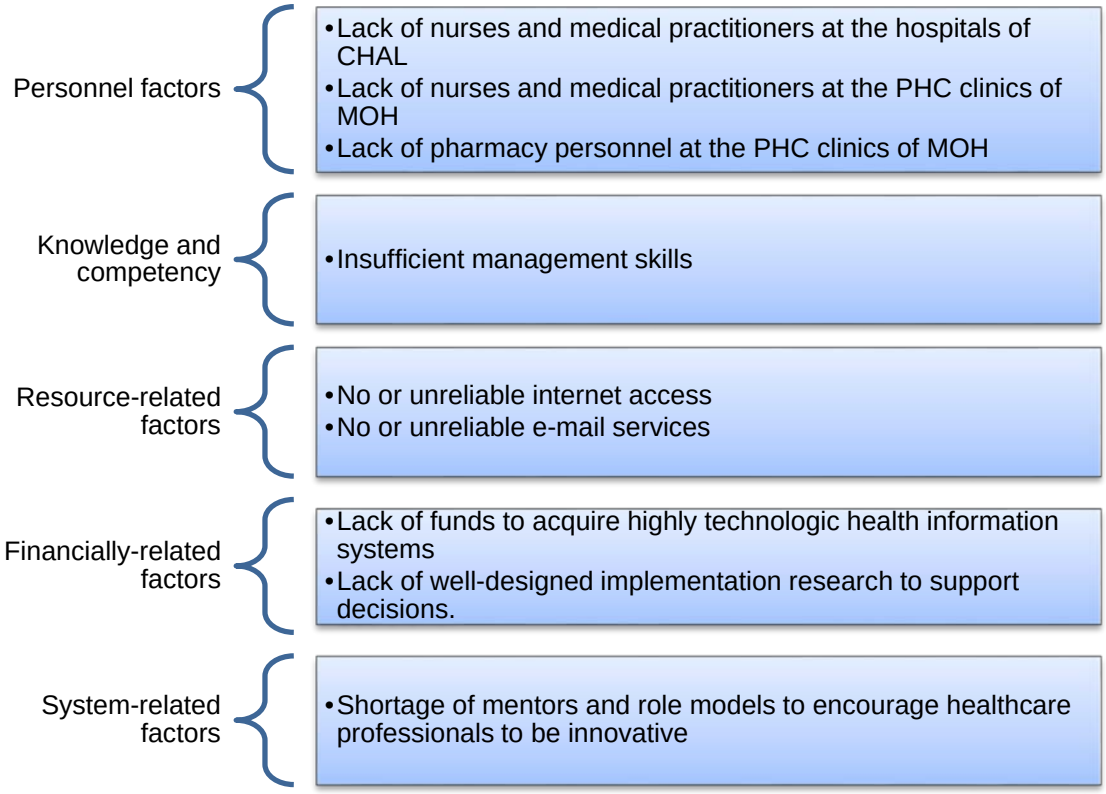

Figure 3-22: Barriers to HIV/AIDS treatment guidelines implementation as identified by healthcare professionals at the HIV/AIDS programme level

3.7.6.2 Barriers identified at the DHMT level

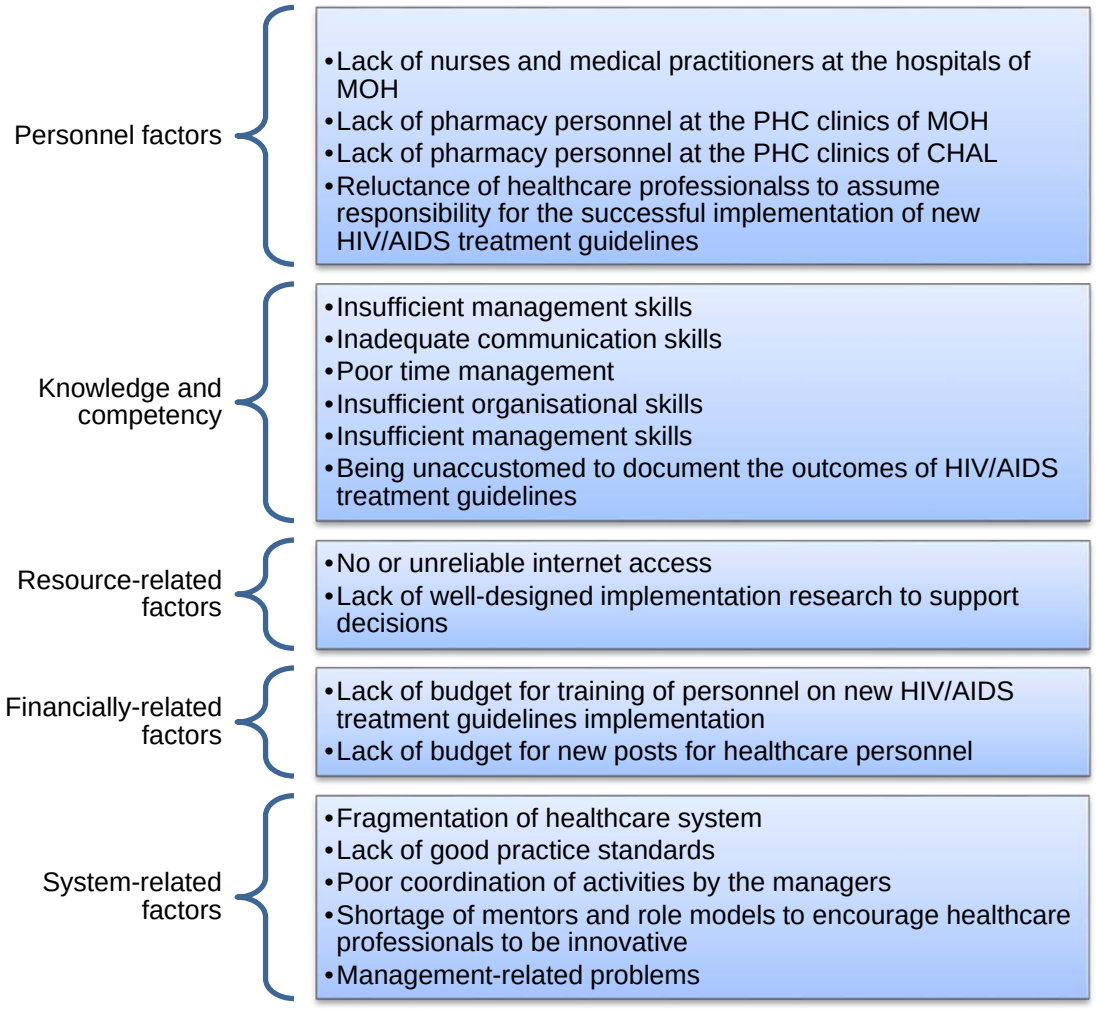

Figure 3-23: Barriers to HIV/AIDS treatment guidelines implementation as identified by DHMT level healthcare professionals

3.7.6.3 Barriers identified by PHC managers at the PHC facilities

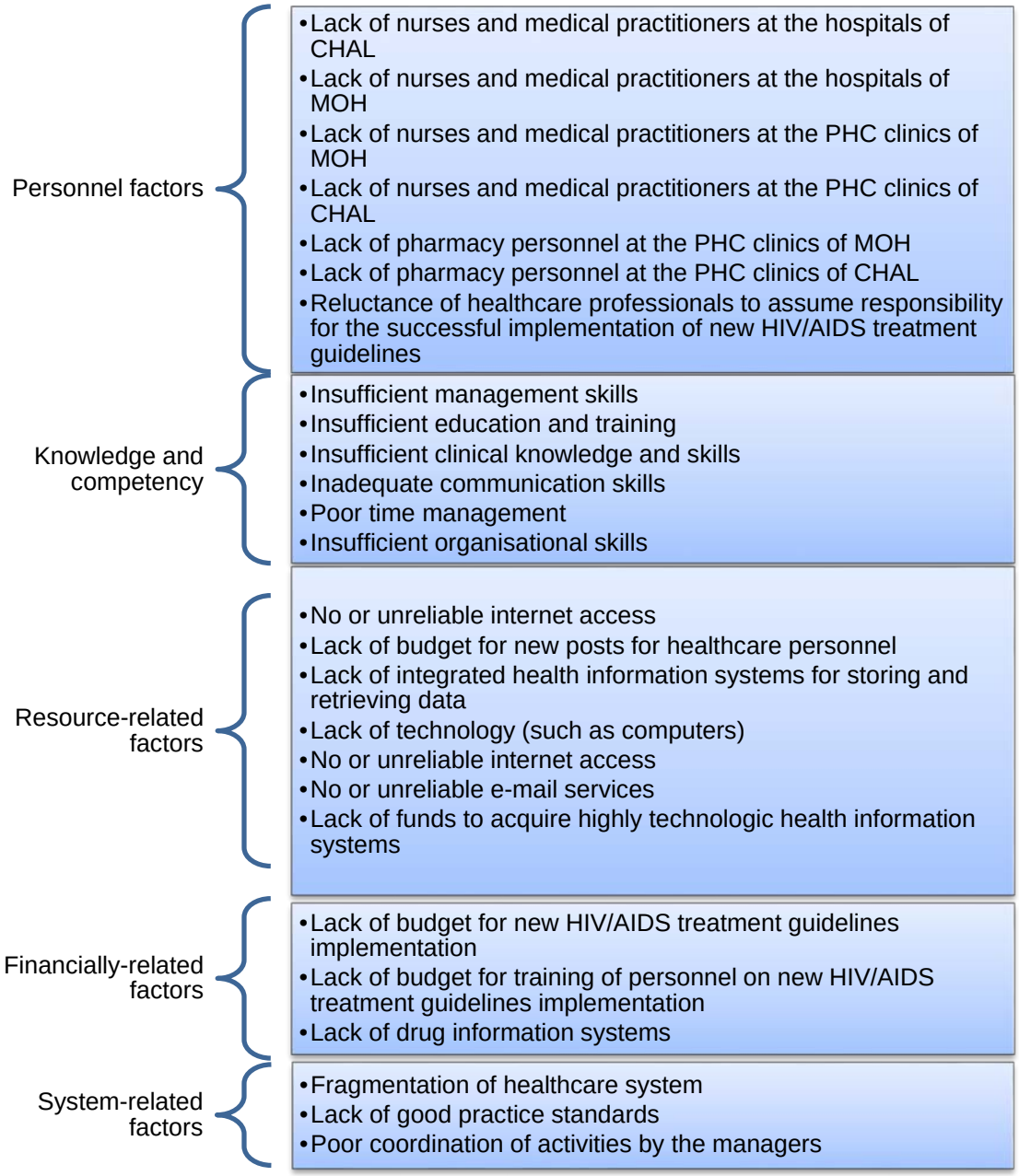

Figure 3-24: Barriers to HIV/AIDS treatment guidelines implementation as identified by PHC facilities' managers

3.7.6.4 Barriers identified by healthcare professionals at the PHC facilities

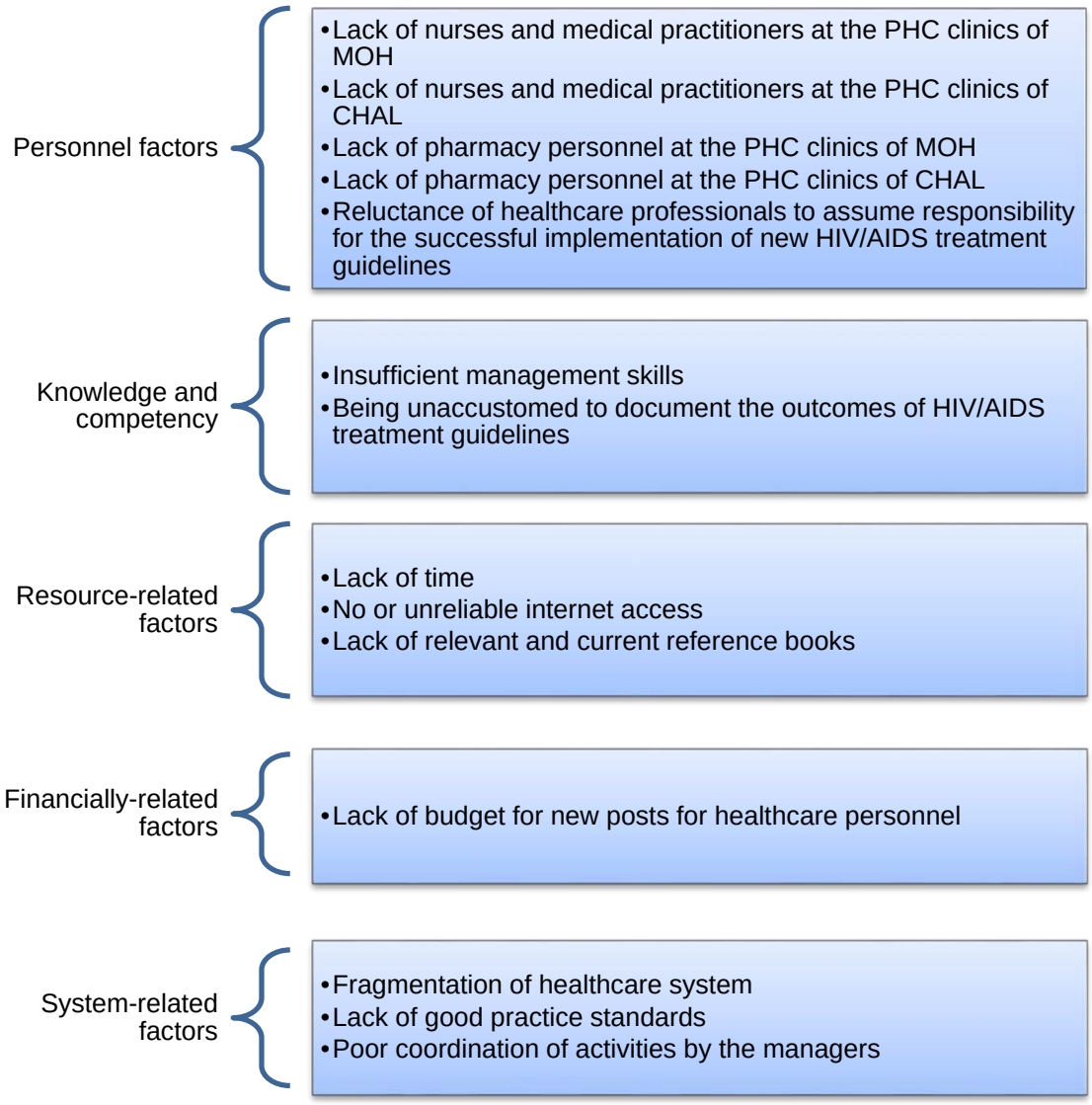

Figure 3-25: Barriers to HIV/AIDS treatment guidelines implementation as identified by PHC facilities' healthcare professionals

3.8 The impact of research finding on service provision regarding the implementation of HIV/AIDS treatment guidelines

In order to answer the research question, 'How can the implementation of HIV/AIDS treatment guidelines be improved?', this improvement can be observed by addressing the following:

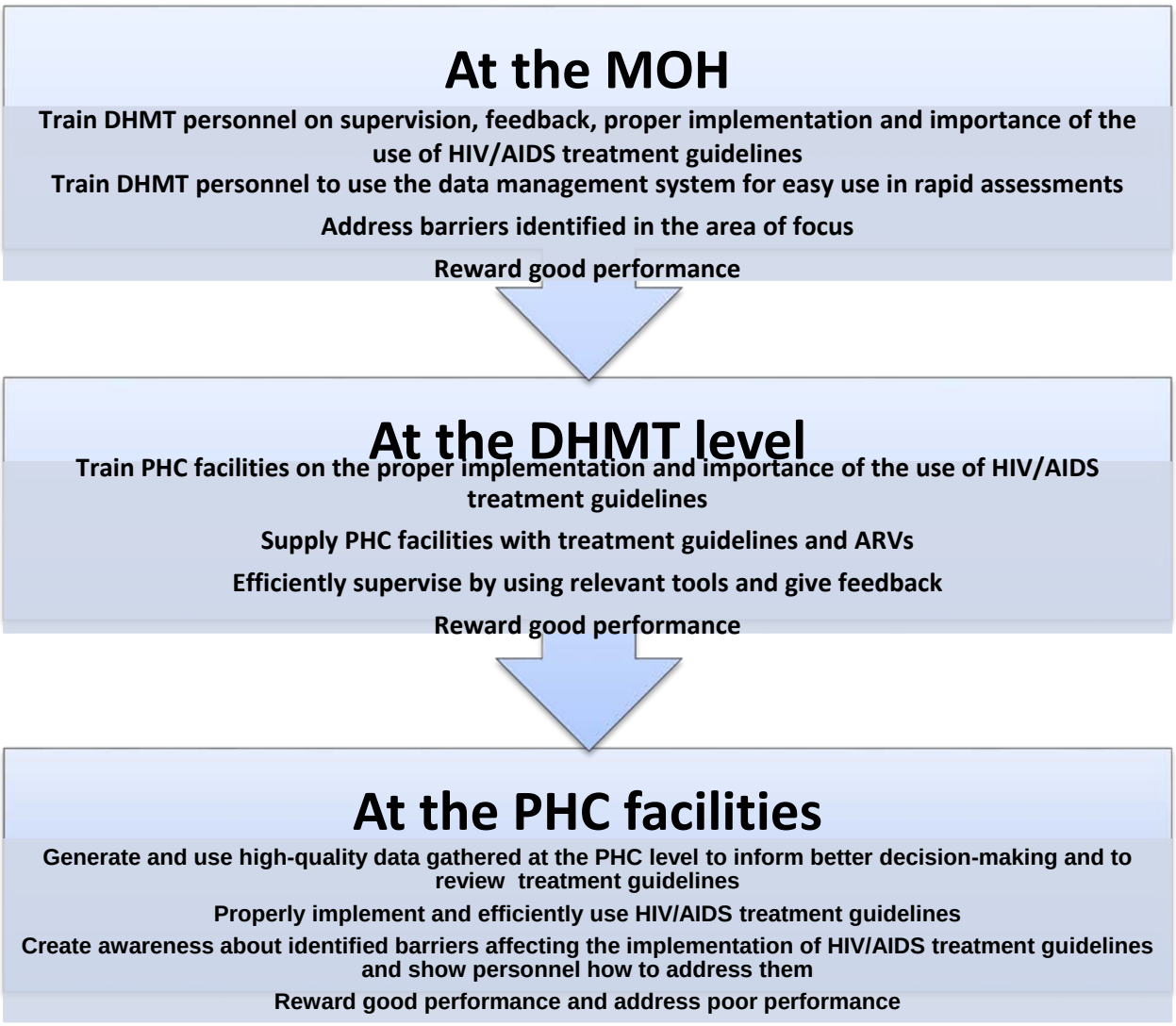

Figure 3-26: The impact of research finding on service provision regarding the implementation of HIV/AIDS treatment guideline

3.9 Chapter summary

Chapter 3 dealt with the results and discussions of the study. It started by presenting the demographic results followed by the pre-implementation results covering adoption and review of HIV/AIDS treatment guidelines. Then the results related to the objectives of the study were presented after. Implementation processes, followed by implementation drivers were presented and relevant discussions supported by literature. Finally, the implementation barriers results were presented and the impact of this empirical research results on service provision was also dealt with.

Chapter 4 will follow dealing with the fourth objective of the study which is to develop implementation framework for resource limited settings.

CHAPTER 4 IMPLEMENTATION FRAMEWORK

4.1 Introduction

Chapter 4 describes the development of an HIV/AIDS treatment guidelines implementation framework for resource-limited settings. The development of an implementation framework involved a review of different frameworks and selection terms that can also be adopted and used for other interventions. It also involved the selection of relevant implementation strategies. A framework assessment tool that will be used as an evaluation tool, and its assessment is outlined. The fourth objective of this study centres around developing an implementation framework to guide the implementation of HIV/AIDS treatment guidelines in resource-limited settings in order to monitor progress.

This chapter addresses the fourth objective of the study:

- To develop a framework for the implementation of HIV/AIDS treatment guideline in resource-limited countries such as Lesotho.

In resource-limited settings, healthcare professionals often provide routine healthcare in PHC clinics with limited access to basic medical equipment and poor referral systems to a higher level of care (Yapa & Bärnighausen, 2018:154). In order to improve this situation, healthcare professionals should use the best available resources. One such resource is evidence-based guidelines, and its optimal implementation is essential. Healthcare professionals are often expected to implement new or adopted guidelines.

Fixsen *et al.* (2005:11) define implementation as a specific set of activities intended to put an activity or programme of known magnitude into practice. Farley *et al.* (2013) describe an implementation framework as a graphical or narrative representation of key factors, concepts or variables to explain an implementation phenomenon and, as a minimum, need to include steps or strategies for implementation. There are potential benefits obtained from using conceptual frameworks and these lead to a systematic knowledge translation process and, consequently, a change of practice and the spread of evidence (Tabak *et al.*, 2012).

According to Proctor *et al*. (2013), implementation strategies are techniques or methods used to improve the adoption, implementation and sustainability of a clinical programme or practice. According to Proctor *et al*. (2013), implementation strategies are procedures or methods used to improve the implementation of a clinical program or practice. Powell *et al.* (2015) developed

73 discrete implementation strategies to use when implementing innovation and new programmes (refer to Chapter 2, Section 2.3.3). Implementation strategies are also important for this research because they guide what steps to take when HIV/AIDS treatment guidelines are implemented.

4.2 Selection of implementation strategies

Implementation strategies have to be selected and proposed to guide the process of implementation (Powell *et al.,* 2015). Table 4-1 shows selected implementation strategies, that were developed by Powell *et al.* (2015), applicable to this study, and their descriptions. The strategies were used to develop the implementation framework (refer to Chapter 2, Section 2.3.3).

Table 4-1: Selected implementation strategies

Strategy number	Implementation strategy	Definition
1	Develop a formal implementation plan	Develop an implementation plan that includes all goals and strategies. The implementation plan must consist of the aim/purpose of the implementation, the scope of the change (such as what organisational units are affected), timeframe and milestones, and appropriate performance/progress measures. Use and update this plan to guide the implementation effort over time (refer to Annexure Q for an example of the implementation plan).
2	Assess for readiness for change and identify barriers and facilitators	Determine the degree of readiness in an organisation to carry out the implementation, and assess barriers that may hinder implementation and strengths that can complement implementation effort (refer to Annexure Q for an example of readiness to change checklist).
3	Capture and share local knowledge	Acknowledge success in newly acquired experience and local knowledge from implementation sites, and then make sure that it is shared among other sites.
4	Stage an implementation scale-up	Turn implementation efforts into small pilots or demonstration projects and progressively move to a system-wide rollout.

Source: Powell *et al.* (2015)

4.3 Development of HIV/AIDS treatment guidelines implementation framework

There is a need to develop a framework that can be easily understood and used by health professionals – with no prior learning of implementation science – who have to implement the HIV/AIDS treatment guidelines in a resource-limited setting. Yapa and Bärnighausen (2018:154) offer a guide to online implementation science courses for health professionals who implement guidelines or programmes. However, implementers do no need to do a course in implementation science, that is why a framework is needed to guide implementation in a resource-limited setting. With this in mind, an implementation framework must contain an assessment tool that is easy to use, and whose results can be evaluated, interpreted and conclusions can be drawn that will be used to guide decisions related to challenges emerging from the process of implementation. In resource-limited settings, the framework has to guide the implementation of HIV/AIDS treatment guidelines in terms of success in an implementation outcome and patient care and treatment outcome.

A comprehensive literature review for the study was reported on in Chapter 2. In order to achieve the fourth objective of the study, the following frameworks were analysed, evaluated, internalised and reflected upon: the ILS (refer to Chapter 2, Section 2.3.4), the CFIR (refer to Chapter, Section 2.5.2.1), the NIRN (refer to 2.5.2.2) and the PARiHS (refer to Chapter 2, Section 2.5.2.4). Barriers were identified in the literature (refer to Chapter 2, Section 2.5.2.3) and were also included in the development of the data collection instrument of the framework (refer to Chapter 3, Section 3.7).

Terms were selected from these frameworks that could be used to build the HIV/AIDS treatment guidelines implementation framework for a resource-limited setting. The framework will be known as the HIV/AIDS treatment guidelines implementation framework for resource-limited settings (GIFRS). The empirical results of this study from the three levels of the healthcare system namely: policy (HIV/AIDS programme level), supervisory (DHMT level), and PHC facilities (PHC managers and healthcare professionals) also contributed to information used to build this framework.

Therefore, it is envisaged that when this framework is applied in a resource-limited setting, it will be easy to identify implementation challenges at any stage. Seeing as the final outcomes of the assessment tool are measurable, it will be easy to tell whether or not the implementation of the HIV/AIDS treatment guidelines has been successful and if not, what the challenges were that led to the unsuccessful implementation and how to remedy them.

Table 4-2 shows selected terms, their description and elements used to develop the HIV/AIDS treatment GIFRS.

Table 4-2: Terms used to develop the HIV/AIDS treatment GIFRS

Selected terms	Description	Elements
Implementation leadership	The implementation leadership needed must be measurable and have relevant competencies of management in implementation (Battilana *et al*., 2010:422; Aarons *et al*., 2014:45)	Proactive Knowledgeable Supportive Perseverant
Planning	A plan must be formulated by leadership involving the stakeholders and shared among implementing staff with shared goals and at different implementation sites (Battilana *et al*., 2010:422; Damschorder *et al*., 2009)	Developed availability and distributed
Evidence	The evidence on which the guidelines are based has to be generated through rigorous studies which were critically appraised and clinical experience (Kitson *et al.,* 1998:150; Rycroft-Malone *et al.,* 2002:175), Harrison *et al*. (2013:49) state the need for locally generated information.	Randomised clinical trials Reviews Cross-sectional studies Qualitative research Routine reports
Facilitation	Facilitation focuses on implementation and what is being implemented, such as HIV/AIDS treatment guidelines or programmes (Rycroft-Malone *et al.*, 2002:174; Stetler *et al.*, 2011:13)	Implementation plan Implementation tool HIV/AIDS treatment guidelines
Execution	The actual implementation of HIV/AIDS treatment guidelines when prescribing and dispensing is carried out, as well as managing drug supply according to the reviewed HIV/AIDS treatment guidelines (Carroll *et al*., 2007; Damschorder *et al*., 2009; Pearson *et al*., 2005:978)	Availably of HIV/AIDS treatment guidelines daily used, routine reporting evaluated
Implementation outcome	The implementation outcome will be measured with implementation success: $I = f$ E + IOs Where: *I* denotes implementation success, E denotes effectiveness, IO denotes implementation factors (Proctor *et al*. 2009:24; Rabin *et al*., 2008; Rye & Kimberly, 2007)	Acceptability Adoption Appropriateness Costs Feasibility Fidelity Penetration Sustainability

Source: Author's own construction

4.3.1 Implementation leadership

The health system structure has leadership at all levels, namely the policy level, supervisory level and clinical level. Therefore, all leaders must have not only professional skills but also leadership skills (see Table 4-2) to implement new programmes and treatment guidelines. As mentioned earlier, Docherty *et al*. (2017:8) state that it is hard for clinicians to fulfil leadership roles in policymaking and planning due to lack of training and experience. What leaders do and how they perform these actions describe the relationship between leadership and implementation outcome (Mosson *et al*., 2018). Both transformation leadership and transactional leadership skills are required because the first ensures that the work is done and the other motivates and provides rewards. Fixsen *et al*. (2005) describe leadership drivers as adaptive and technical leadership (refer to Chapter 2, Section 2.5.2.2). These two types are based on the nature of problem they addressand were used for the empirical study tools. However, using knowledgeable, supportive, pro-active and perseverant leadership is relevant because implementing new changes in the treatment guidelines is not necessarily a challenge or a problem, rather an improvement of patient care and treatment (refer to Chapter 2, Section 2.3.4). It is therefore decided to use these terms which were more relevant and suitable for resource-limited settings.

According to the results, DHMT healthcare professionals were mainly females 20 (74.1%) and the majority hold professional degrees 19 (70.4%) as the highest level of education attained. They mainly have work experience of less than 20 years 24 (88.8%) and 3 (11.1%) of them have work experience of more than 20 years (refer to Chapter 3 Table 3-2). The results of PHC facilities were presented (refer to Chapter 3, Table 3-3) and showed that most of the 87 PHC managers were females 71 (81.6%) and hold a diploma 54 (65.5%). The majority of PHC managers 50 (57.5%) were older than 36 years. In the healthcare professionals' category, the majority were female 21 (72.4%), younger than 36 years 18 (62.1%), and had professional degrees 20 (68.9%) (refer to Chapter 3, Section 3.7). This is relevant because it shows that PHC managers, even though they have a managerial role, they supervise healthcare professionals who have a higher qualification .

DHMT healthcare professionals 23 (85.2%) indicated that they supervise PHC managers on the implementation of the latest HIV/AIDS treatment guidelines (refer to Chapter 3, Table 3-6). The results indicate that the PHC managers 52 (61.2%) supervised healthcare professionals in PHC facilities using treatment guidelines in the care and treatment of

HIV/AIDS patients (refer to Chapter 3, Table 3-7). The PHC managers 54 (65.9%) also indicated that they provided feedback after supervision.

Regarding implementation barriers, healthcare professionals from the HIV/AIDS programme, DHMT and PHC facilities considered insufficient management skills as a barrier to the implementation of HIV/AIDS treatment guidelines. DHMT healthcare professionals agreed that lack of task agreements and performance evaluation criteria 14 (54.0%), management-related problems were 19 (73.1%) and poor activities coordination by the HIV/AIDS managers 21 (80.8%) were barriers (refer to Chapter 3, Section 3.7). These identified barriers can shed light on what to focus on when addressing barriers in order to improve treatment guidelines uptake at the PHC facilities.

4.3.2 Planning

Leadership must develop an implementation plan and share it with all relevant levels. They must plan, supervise and provide resources to support the implementation of change (Battilana *et al*., 2010:422). The organisation theory of innovation states that leaders play an important role in creating readiness for change and developing plans, practices, structures and strategies to support implementation (Weiner, 2009:67). The implementation plan must contain actionable words that are measurable. It has to be visible, and milestones measured as activities in the plan must be completed (refer to Chapter 2, Section 2.5.2.1.1).

From Chapter 3, Section 3.1.1, the results indicate that there was an implementation plan, but it was not fully disseminated to all the DHMT and PHC facilities. According to the results of the implementation barriers to HIV/AIDS treatment guidelines (refer to Chapter 3, Section 3.7), DHMT healthcare professionals 14 (54.0%), PHC managers 51 (58.6%) and PHC healthcare professionals 16 (55.2%) identified lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines as a barrier.

4.3.3 Evidence

Systematic reviews of randomised clinical trials (RCT) provide evidence that is considered high up in the hierarchy of evidence, while anecdotal and descriptive information also give evidence but is low on the continuum (Kitson *et al.,* 1998:150). Rycroft-Malone *et al.,* (2002:175) argue that even though RCT provides accurate information about effectiveness, other types of research e.g. qualitative research can reveal information related to other clinical problems. According to Rycroft-Malone *et al.* (2002:175), evidence should be critically

appraised to determine its credibility, before it can be implemented. The evidence used for the HIV/AIDS treatment guidelines comes from WHO research, which is based on high-quality research (WHO, 2015:20) (refer to Chapter 2, Section 2.2.1). Local information, however, may provide evidence that can be more applicable in a local setting (Harrison *et al*., 2013:49).

4.3.4 Facilitation

Facilitation is a technique by which someone makes things easier for others, in this case, to accept change. The function can be carried out by appropriate external or internal facilitators (Rycroft-Malone *et al.*, 2002:174; Stetler *et al.*, 2011:13). The facilitator has an appointed role, internal or external, to help and enable, and he/she possesses skills to fulfil the purpose for which he/she was appointed. It is worth mentioning that training and coaching were terms that were selected and used for developing the questionnaires; however, facilitation seems to have a wider role in the implementation of treatment guidelines in resource-limited settings (refer to Chapter 2, Section 2.5.2.4).

The results of the empirical study indicated that all healthcare professionals at the HIV/AIDS programme (n=5) were trained on the changes made to the 2016 treatment guidelines, and they all confirmed that they were trained to train other healthcare professionals. The training was offered by the WHO for one week. The healthcare professionals (n=5) at the HIV/AIDS programme level reported that the training was evaluated after the completion of the training and the evaluation forms were filled (refer to Annexure M).

DHMT healthcare professionals (n=15, 55.6%) were also trained. Considering the results for the open-ended questions in the DHMT questionnaire, some healthcare professionals indicated that they were trained mainly for one week 10 (37.0%), others indicated that they were trained for less than one week 4 (14.8%) and one professional was trained for two weeks. The training was provided by the MOH and EGPAF 15 (55.6%). Four healthcare professionals indicated that they evaluated the training by completing the evaluation form. The results also show that DHMT healthcare professionals 5 (18.5%) were trained to train other healthcare professionals (refer to Chapter 3, Section 3.6.2.2.1).

At the PHC facilities, PHC managers 45 (51.7%) indicated that they were trained to implement new changes in the treatment guidelines. They mentioned that the training was provided by HIV/AIDS programme level healthcare professionals 13 (14.9%), development partners 16 (18.4%), consultant 3 (3.4%), and others (refer to Annexure P). The duration of the training ranged from less than one week 7 (8.1%), one week 29 (33.3%), two weeks 6 (6.9%) and not

specified 4 (4.6%) (refer to Chapter 3, Section 3.6.2.2). Lack of education and training was identified by PHC managers as a barrier to HIV/AIDS treatment guidelines implementation (refer to Chapter 3, Section 3.7.2). From the results of the study it can be deduced that even though training took place at all the three levels, the knowledge was given under varying conditions. In facilitation, the role of a facilitator is practical, administrative, supportive and developmental, and he/she explores and releases the inherent potential in healthcare professionals (Rycroft-Malone *et al.*, 2002:176; Stetler *et al.*, 2011:17). This will ensure transfer of knowledge so that when healthcare professionals carry out patient care and treatment at the PHC facilities they know exactly what they are supposed to do.

4.3.5 Executing

Quality of execution comprises a planned course of action, timeliness of task completion and engagement of key individuals involved in the implementation process (Carroll *et al*., 2007; Pearson *et al*., 2005:978). The results of the empirical study indicated that this section was reported by the PHC managers at the PHC level. The PHC managers 42 (48.3%) reported nurses to be responsible for patient consultation at the PHC facilities (refer to Chapter 3, Table 3-7). The PHC managers mentioned nurses 20 (23.0%), pharmacy technicians 13 (14.9%), and, to some lesser extent, pharmacists 6 (6.9%) as the healthcare professionals who dispense ARVs at the PHC facilities. Nurses 26 (29.9%) were reported as the professionals mainly responsible for supplying ARVs when no pharmacist was available (refer to Chapter 3, Section 3.5.3). Lack of time 17 (58.2%) and lack of relevant and current reference books 16 (55.6%) are recognised as barriers by PHC healthcare professionals (refer to Chapter 3, Section 3.7.3).

4.3.6 Implementation outcomes

According to Proctor *et al*. (2009:24), implementation outcomes consist of acceptability, adoption, appropriateness, costs, feasibility, fidelity, penetration and sustainability.

- *Acceptability* is the perception among implementation stakeholders that a given treatment, service, practice or innovation is agreeable, palatable or satisfactory. Proctor *et al*. (2009:24) presume rated acceptability to be dynamic, change with experience and can be measured through stages of implementation.

- *Adoption* refers to the intention, initial decision, uptake or action to try or employ an innovation or evidence-based practice (Proctor *et al*., 2009:24; Rabin *et al*., 2008; Rye & Kimberly, 2007).

- *Appropriateness* is the perceived fit, relevance or compatibility of the innovation or evidence-based practice for a given practice setting, provider or consumer; and/or perceived fit of the innovation to address a particular issue or problem.

- Implementation *cost* is defined as the cost impact of an implementation effort (Proctor *et al.,* 2009:24).

- *Feasibility* is the extent to which a new treatment or an innovation can be successfully used within a given setting (Karsh, 2004).

- *Fidelity* compares the intervention that was implemented with the one prescribed by the programme developers in the original protocol (Dusenbury *et al*., 2003; Rabin *et al*., 2008).

- *Penetration* is defined as the integration of practice within a service setting (Proctor *et al*., 2009:24).

- *Sustainability* is defined as the level to which a newly implemented treatment is maintained over time (Rabin *et al*., 2008).

It is worth stating that implementation outcomes were not used to develop the study tools of this research; therefore, this section will not include the empirical results of the study, however, the terms are needed for the development of the framework.

4.4 Implementation framework for implementing HIV/AIDS treatment guidelines in limited-resourced settings (GIFRS)

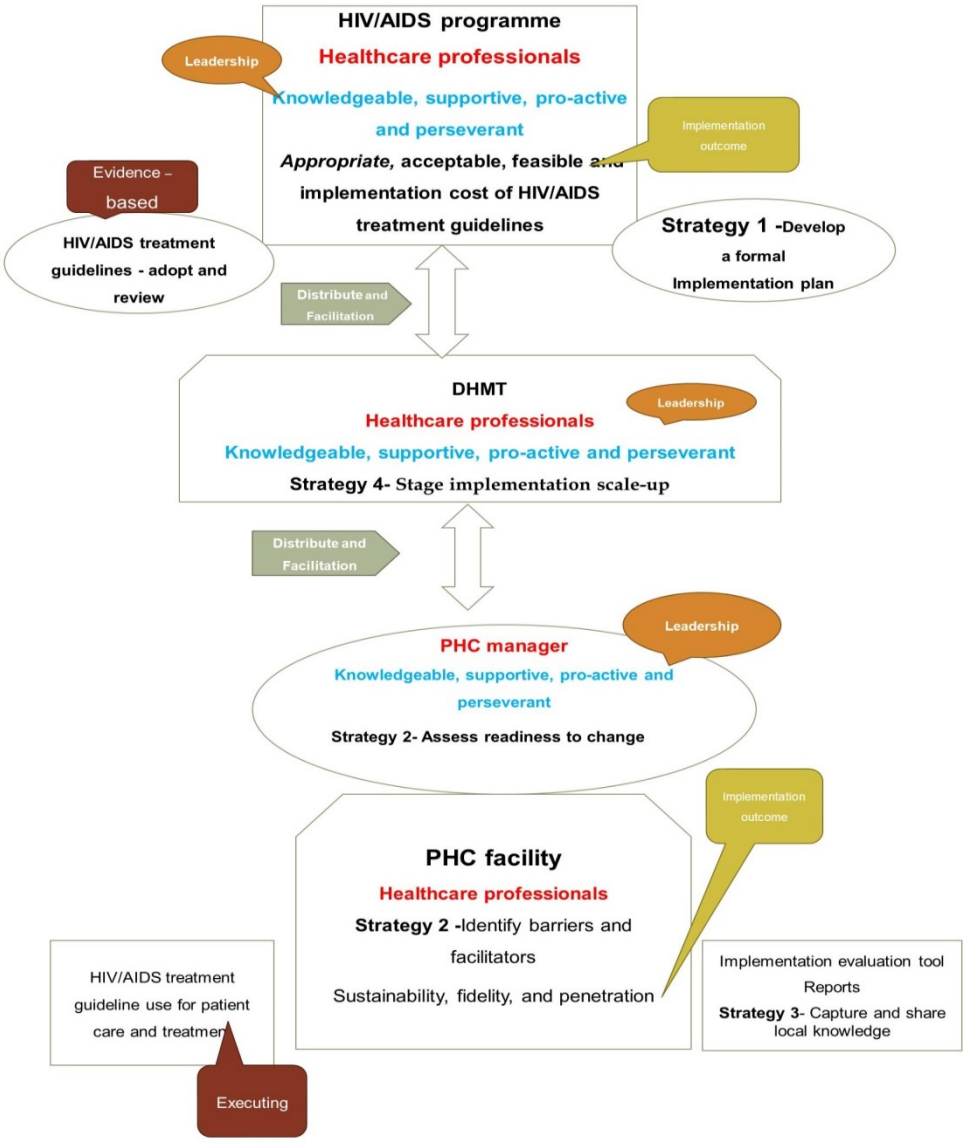

Figure 4-1: HIV/AIDS Treatment guidelines (GIFRS)

- *Three large boxes – represent levels of healthcare system in Lesotho*
- *Green square pointers – represent implementation outcomes*
- *Brown bubble pointers – represent implementation leadership*
- *Dark Brown square pointers- represent executing and evidence*
- *Grey pointers – represent facilitation and distribution of treatment guidelines and the implementation plan*
- *Two way arrows – represent transfer of information between the levels*
- *Oval boxes attached to HIV/AIDS programme – represent two major activities which are treatment guidelines and implementation plan*
- *Large oval box attached to PHC level – represent PHC management*
- *Two small squares attached to PHC facilities – represent two major activities which are use of treatment guidelines for patient care and treatment and reporting back using information generate patient care and treatment and filling of the implementation evaluation tool*

The researcher hopes that this framework will guide the implementation of future HIV/AIDS treatment guidelines, particularly in a resource-limited setting such as Lesotho. It covers leadership that is suitable for implementation and, as stated by Aarons *et al*. (2014:45), that is knowledgeable, supportive, pro-active and perseverant. These are the qualities that the healthcare professionals at the HIV/AIDS programme, the DHMT and the PHC managers should have and display.

Specific implementation strategies have been selected from a list of 73 implementation strategies (Powell *et al.,* 2015):

- Strategy 1 - develop a formal implementation plan (applies to the HIV/AIDS programme level).
- Strategy 2 - assess for readiness and identify barriers and facilitators (applies to PHC facilities).
- Strategy 3 - capture and share local knowledge (applies to the PHC facilities).
- Strategy 4 – stage an implementation scale-up (applies to the DHMT level).

The implementation plan for implementing HIV/AIDS treatment guidelines should be formulated and distributed to the DHMT and PHC facilities.

HIV/AIDS treatment guidelines are essential for executing patient care and treatment at the PHC facilities; however, they are formulated or adopted by healthcare professionals at the HIV/AIDS programme level. Therefore, the health professionals at the HIV/AIDS programme are responsible for ensuring that HIV/AIDS treatment guidelines are appropriate, acceptable, adopted and cost-effective as proposed by Proctor *et al*. (2014). Some of the implementation outcomes are relevant for evaluation at the PHC facilities and these are sustainability, fidelity and penetration. For HIV/AIDS treatment guidelines to have an impact on patient care and treatment, they have to be distributed to all PHC facilities and each healthcare professional must have a copy for daily use. However, the distribution must go hand in hand with facilitation which will enable understanding and the application of changes to the treatment guidelines.

The implementation evaluation tool plays an important role as the key component of the HIV/AIDS treatment GIFRS. It is envisaged that it will be used by healthcare professionals at the PHC facilities to evaluate leadership qualities of the PHC managers, executing and availability of the plan. The evaluation tool will also check the kind of evidence the guidelines were based on and will also be able to determine the implementation outcomes. It is also envisaged that after the implementation tools have been completed, they will be sent to the DHMT where they will be analysed and the report will be written and sent to the HIV/AIDS programme level to inform decision making. For instance, if the tool has identified a problem with leadership qualities at the PHC facilities, then training can be organised regarding leadership skills. If HIV/AIDS treatment guidelines do not penetrate to some of the PHC facilities, it will be realised early, and the HIV/AIDS treatment guidelines will be sent to the respective facilities. The role of DHMT healthcare professionals in the framework is that of facilitation, distribution and report writing. Because they have information generated by data collected to analyse and write reports, DHMT healthcare professionals can guide the scale-up of patient care and treatment, if a step-wise approach in implementation is required.

4.5 Evaluation tool of the HIV/AIDS treatment guidelines implementation framework

The HIV/AIDS treatment guidelines implementation framework includes an evaluation tool, because resource-limited countries need a tool that is easy to use and that can clearly point out where the problem is so that it can be rectified in time before more limited resources are consumed.

Below is the HIV/AIDS treatment guidelines implementation framework evaluation tool which was designed based on the selected terms of framework to evaluate implementation success

in a resource-limited setting. It was developed from a 38-item, 5-point Likert scale, in ascending order:

- ‘strongly disagree’ = 1
- ‘disagree’ = 2
- ‘neither agree nor disagree’ = 3
- ‘agree’ = 4
- ‘strongly agree’ = 5

Table 4-3 shows the evaluation tool developed from selected terms and elements of the implementation framework for a resource-limited country.

Table 4-3: Evaluation tool of the HIV/AIDS treatment guidelines implementation framework

Constructs	Statement	1	2	3	4	5
Leadership	Proactive					
	Establishes standards for the implementation of treatment guidelines					
	Develops a plan to facilitate treatment guidelines implementation					
	Removes obstacles to the implementation of treatment guidelines					
	Knowledgeable					
	Knows about the implementation of treatment guidelines					
	Is knowledgeable about treatment guidelines					
	Can answer staff questions about treatment guidelines					
	Supportive					
	Supports employee efforts to use treatment guidelines					
	Supports employee efforts to learn more about treatment guidelines					
	Recognises and appreciates employee efforts					
	Perseverant					
	Perseveres through the ups and downs of implementing					
	Tackles challenges of implementing treatment guidelines					
	Reacts to critical issues regarding the implementation of treatment guidelines					
Plan	The implementation plan is available					
	It is shared among all implementing sites					
Evidence	Evidence comes from books					
	Evidence comes from a peer-review article					
	Evidence comes from WHO literature					
	Evidence comes from qualitative research					
	Evidence comes from local reports					

Constructs	Statement	1	2	3	4	5

Facilitation	Addresses aims of implementation
	Addresses readiness to change issues
	Addresses implementation barriers and facilitators
	Minutes of implementation plan discussion
	Assesses data quality and its importance
	Discusses the implementation tool
	Discusses changes in treatment guidelines
Executing	Everybody has a copy of treatment guidelines
	Uses treatment guidelines routinely
	Reports treatment outcomes routinely
	Monitors use of treatment guidelines
Implementation outcome	Assess acceptability of treatment guidelines among its users
	Evaluates the adoption of treatment guidelines to local setting
	Discuss the appropriateness of treatment guidelines
	Allocates costs for the implementation of treatment guidelines
	Assesses feasibility for implementation at all levels of care
	Evaluates fidelity – implementation of guidelines
	Assesses penetration of use in all facilities concerned
	Provides sustainability – use of guidelines becomes routine practice

Source: Author's own construction

4.5.1 Interpretation of the results

Mean scores should be used. A mean score of lower than 2.4 will be 'disagree' and 'strongly disagree', a mean score between 2.4 - 3.6 will be 'neither agree nor disagree', and a mean score above 3.6 will be 'agree' and 'strongly agree'. Those who express their opinion will 'agree' or 'disagree', and those who do not wish to express their opinion will 'neither agree nor disagree'.

In addition to the implementation assessment tool, open-ended questions can be asked if the majority of responses fall between the mean scores of 2.4 and 3.6, in order to understand why people choose to abstain from answering the questions. The tool ought to be used in the beginning, at mid-term and at the end of implementation in about a year's time. Concerns should be raised if, at midterm, the tool shows a mean score of 3.6 and above in less than 50 % of the responses. Implementation success will be achieved when responses to the tool show a mean score of 3.6 in 75% of the items at the end of implementation. It is envisaged

that the evaluation tool of the HIV/AIDS treatment guidelines implementation will be administered by PHC managers to all healthcare professionals involved in the implementation of the HIV/AIDS treatment guidelines and will be part of the evaluation of implementation success. However, the evaluation tool can assess readiness to change, facilitation, leadership, plan distribution even before implementation of new changes in the treatment guidelines can be rolled out to the PHC facilities.

4.6 The impact of the GIFRS on the implementation of future treatment guidelines

This framework is designed and developed to include implementation strategies and implementation assessment tools together with its evaluation and interpretation. The purpose of the framework is to guide the implementation of treatment guidelines through the stages of adoption, review, facilitation use and evaluation. This is why an evaluation tool was made for the HIV/AIDS programme level but filled at the PHC facilities and analysed at the DHMT level to write reports that inform decision making at the HIV/AIDS programme level.

The implementation assessment tool will evaluate implementation success for the new treatment guideline or when implementing changes in the guidelines. It will also evaluate patient care and treatment outcomes through executing which takes place at the PHC facilities. When it is used during the implementation process, implementation outcomes can be evaluated at different points and at the final stages of implementation. The results of the patient care treatment outcomes and implementation outcomes can be used to improve treatment guidelines implementation – which fulfils the aim of the development of this implementation framework and, in turn, meets the fourth objective of the study. It also brings new knowledge to the body of implementation science, particularly in a resource-limited setting where there is a dire need for implementation guidance.

4.7 Chapter summary

The implementation framework was developed using other existing frameworks from the literature. Implementation strategies were also selected and used for the development of the framework. An assessment tool was also developed to assist in quantifying the success of implementation.

The following chapter, Chapter 5, deals with conclusions, recommendations and limitations of the study.

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CHAPTER 5 CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

5.1 Introduction

In this chapter, the conclusions will be discussed, and recommendations on specific aspects of the implementation of the HIV/AIDS treatment guidelines will be made. These aspects will be discussed according to the specific objectives as stated in Chapter 1. The focus is on the implementation processes, implementation barriers, implementation drivers and the implementation framework for HIV/AIDS treatment guidelines in resource-limited settings. The specific limitations of this study will also be discussed.

5.2 Study conclusions and recommendations

The conclusions will address all four objectives of the study. The recommendations will cover the four objectives but will be applied in terms of practice, policy and education. Section 5.2.1 to 5.2.4 presents the conclusions and recommendations formulated regarding the objectives of the empirical study and are supported by applicable literature as presented in Chapter 2.

- To explore current HIV/AIDS treatment guideline implementation processes in Lesotho.
- To investigate how implementation drivers may affect the implementation of current HIV/AIDS treatment guidelines in Lesotho.
- To identify barriers to the implementation of HIV/AIDS treatment guideline in Lesotho.
- To develop a framework for the implementation of HIV/AIDS treatment guideline in resource-limited countries such as Lesotho.

5.3 Conclusions and recommendations formulated regarding the first objective: Implementation processes

The conclusions drawn from the results of the first study objective are as follows:

The implementation process is one of the five domains of the Consolidated Framework for Implementation Research (CFIR) (Damschroder *et al.,* 2009:50). Implementation processes are systematic actions taken to achieve a certain goal which, in this case, is the full implementation of HIV/AIDS treatment guidelines. The implementation process is a series of

activities that occur – not in a sequential manner – at the same time at different levels (Damschroder *et al*., 2009:50; Pettigrew *et al.,* 2001:697).

The implementation process consists of planning, engaging, executing and reflecting and evaluating (Damschroder *et al*., 2009:50).

Planning refers to the design of a course of action according to set objectives in order to promote effective implementation (Mendel *et al.,* 2008:21). Engaging refers to involving the appropriate individuals in the implementation process (Damschroder *et al*., 2009:50). Executing refers to carrying out implementation activities according to plan (Damschroder *et al*., 2009:50). Reflecting and evaluating refer to an assessment of the progress of implementation, debriefing and feedback (Edmondson *et al*., 2001). The implementation process is discussed in detail in Chapter 2, Section 2.5.2.1.1.

5.3.1 Planning

In 2016, the fifth edition of the HIV/AIDS treatment guidelines was implemented in Lesotho. Before the implementation of the 2016 HIV/AIDS treatment guidelines, certain processes such as the adoption and review of the 2015 WHO HIV/AIDS treatment guidelines (WHO, 2015) were performed (MOH, 2016). In this study, the pre-implementation activities of reviewing and adopting the 2016 HIV/AIDS treatment guidelines were assessed. The healthcare professionals (n=5) at the HIV/AIDS programme were specifically responsible for reviewing the 2016 HIV/AIDS treatment guidelines. Only a few healthcare professionals at the DHMT 3 (11.1%) and PHC managers 4 (4.6%) at the PHC facilities reported that they were involved with the review of the 2015 WHO HIV/AIDS treatment guidelines (refer to Chapter 3, Section 3.4).

Thorough planning is necessary for the successful implementation of any treatment guideline, including the HIV/AIDS treatment guidelines (Pfadenhauer *et al.*, 2017:21). The implementation plan was available as reported by all healthcare professionals at the HIV/AIDS programme level (n=5), but only nine (33.3%) and eight (9.4%) of healthcare professionals at the DHMT and PHC levels, respectively, confirmed it. When asked to describe the implementation plan, healthcare professionals at the HIV/AIDS programme level gave different descriptions; three healthcare professionals said it was a ‘road map’, one said it was ‘a schedule’ and one described what the plan should entail (refer to Chapter 3, Section 3.5.1).

Harrison *et al.* (2013:49) stipulate the need to use a 'planned action' approach to integrate knowledge created outside the context, with local practice. The majority of PHC managers 75 (86.2%) did not answer the question, regarding the plan (refer to Annexure P) which may indicate that the plan was not well distributed to PHC healthcare professionals (refer to Chapter 3, Section 3.5.1). Lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines was considered a barrier by DHMT healthcare professionals 14 (54.0%), PHC healthcare professionals 16 (55.2%) and PHC managers 51 (58.6%) (refer to Section Chapter 3, 3.5.1). Damschroder and Lowery (2013:51) emphasise that where there is no formal implementation plan, the assessment of the quality of execution relative to the plan is impossible.

It is, therefore, concluded that an implementation plan was available but sparsely shared among healthcare professionals at the DHMT level and PHC facilities where the implementation of 2016 HIV/AIDS treatment guidelines mainly took place (Refer to Chapter 3, Section 3.5.1). DHMT and PHC healthcare professionals and PHC managers identified the lack of shared planning on HIV/AIDS programme level regarding the implementation of new HIV/AIDS treatment guidelines, as a barrier (refer to Chapter 3, Section 3.1.2).

Recommendation

It is recommended that healthcare professionals at the HIV/AIDS programme level together with stakeholders must formulate a formal implementation plan and share it with the DHMT and PHC facilities in order to guide the process of implementation. The implementation plan should also be placed on the wall in the PHC manager's office and in the waiting area for patients to see.

5.3.2 Engaging

Healthcare professionals at the HIV/AIDS programme level confirmed that they were all involved in the implementation of the 2016 HIV/AIDS treatment guidelines. The HIV/AIDS programme manager (n=1) reported that there was a healthcare professional with the specific responsibility to oversee the implementation of 2016 HIV/AIDS treatment guidelines at the DHMT (refer to Chapter 3, Section 3.5.2).

Healthcare professionals at the DHMT 19 (70.4%) and PHC facilities 5 (5.7%) indicated that they played a role in the implementation of the HIV/AIDS treatment guidelines and carried out activities such as the distribution of HIV/AIDS treatment guidelines and overseeing that patient care and treatment follow HIV/AIDS treatment guidelines (refer to section Chapter 3, 3.5.2).

Damschroder and Lowery (2013:51) express a need to have an enthusiastic, skilled, capable and committed coordinator who would make sure that the plan is implemented. However, Breimaier *et al.* (2015:43) recognise the input of all other stakeholders as people who could bring about positive input in implementation.

The conclusion that can be drawn regarding engaging is that even if there was someone formally engaged to oversee the implementation of the 2016 HIV/AIDS treatment guidelines, the healthcare professionals were not aware of it. However, healthcare professionals at the DHMT and PHC levels indicated that they played a role in the implementation of the 2016 HIV/AIDS treatment guidelines, even when there was no plan to guide them. The healthcare professionals at the DHMT and PHC levels consider the role they played in implementation important.

Recommendation

It is, therefore, recommended that the HIV/AIDS programme manager should formally engage a healthcare professional at each DHMT to specifically oversee implementation of future HIV/AIDS treatment guidelines at PHC facilities using the implementation plan. Individual healthcare professionals must play a role in the implementation activities that appear in the implementation plan.

5.3.3 Executing

Executing was measured through patient care and treatment activities such as consulting patients, dispensing ARVs and managing drug supply. PHC managers reported that nurses conducted patient consultations 42 (48.3%), dispensed ARVs 20 (23.0%) and managed drug supply 26 (29.9%). Pharmacists 6 (6.9%) and pharmacy technicians 13 (14.9%) were also involved in dispensing medicines, and pharmacy technicians 12 (13.8%) conducted drug supply management in the absence of a pharmacist (Refer to Chapter 3, Section 3.5.3).

Although PHC managers indicated that they had copies of the 2016 HIV/AIDS treatment guidelines 70 (80.5%) to guide patient consultations, ARV dispensing and drug supply management, their daily use was lower 60 (69%) when compared with PHC managers who had copies of HIV/AIDS treatment guidelines. PHC managers 50 (57.5%) further affirmed that patient care and treatment were guided by HIV/AIDS treatment guidelines (refer to Chapter 3, Section 3.5.3).

PHC managers played a specific role in distributing copies of the latest HIV/AIDS treatment guidelines to staff, teaching PHC facilities staff about changes made to the latest HIV/AIDS treatment guidelines and ensuring the use of the latest HIV/AIDS treatment guidelines. Other additional literature source used for prescribing included, formulary, textbooks and electronic textbooks were used in prescribing (refer to Chapter 3, Section 3.5.3).

Therefore, it is concluded that patient care and treatment might be adversely affected if there was no formal plan to implement HIV/AIDS treatment guidelines. Some healthcare professionals at the PHC facilities indicated that they had a copy of HIV/AIDS treatment guidelines and reported daily use, others did not. Damschroder and Lowery (2013:51) emphasise that where there is no formal implementation plan, the assessment of the quality of execution relative to the plan is impossible.

Recommendation

It is, therefore, recommended that that copies of HIV/AIDS treatment guidelines are distributed and used and this, in turn, would ensure that patient care and treatment are carried out accordingly. Executing activities such as prescribing, dispensing and drug supply management guided by the HIV/AIDS treatment guidelines – with proper support from the healthcare professionals at the HIV/AIDS programme and DHMT as well as PHC managers – would be more successful at the PHC facilities.

5.3.4 Reflecting and evaluating

Breimaier *et al*. (2015:43) indicate that reflecting and evaluating as a construct, mean quantitative and qualitative feedback. The reflecting is about the progress and quality of implementation accompanied by regular personal and team debriefing about progress and experience (refer to Chapter 3, Section 3.5.4).

Reflecting and evaluating were looked at through the use of task agreements. The availability of task agreements was reported by healthcare professionals at the HIV/AIDS programme (n=1), DHMT 17 (63.0%) and PHC 13 (50.0%) levels. It was also reported by PHC managers 42 (51.2%) (refer to Chapter 3, Section 3.5.4). The study of Medves *et al.* (2010) indicates the need to evaluate guideline implementation and dissemination strategies and their appropriateness for a team-based healthcare setting. Where task agreements were not available, other forms of evaluation were used (such as monitoring and evaluation, appraisal forms, assessment lists and ART registers) to reflect and evaluate healthcare professionals' involvement in the implementation of the 2016 HIV/AIDS treatment guidelines (refer to Chapter

3, Section 3.5.4). Damschroder *et al.* (2009:50) state the importance of taking time to reflect and debrief in order to promote shared learning and improvements.

It can be concluded that there was some form of reflecting and evaluating at the PHC facilities. This, however, was not standardised as various evaluation forms used to gather more information were mentioned in the open-ended questions. In conclusion, at the DHMT level, reflecting and evaluating were carried out by the majority of healthcare professionals.

Recommendation

It is recommended that healthcare professionals at the HIV/AIDS programme level should formulate standard evaluation of implementation forms to be used by the DHMT and PHC facilities for evaluation. In terms of reflecting, healthcare professionals at the HIV/AIDS programme level should set time aside regularly for reflecting with other stakeholders on how the implementation of HIV/AIDS treatment guidelines can be improved. Healthcare professionals at the DHMT level should also reflect on how to improve guidance on patient care and treatment during their quarterly meetings. At the PHC facilities, PHC managers should take time to reflect on how to implement HIV/AIDS treatment guidelines as well as how to supervise patient care and treatment.

5.4 Conclusions and recommedations formulated regarding the second objective: Implementation drivers

Implementation drivers are part of the core components of the National Implementation Research Network (NIRN) (Bertram *et al.*, 2011; Fixsen *et al.*, 2009). Implementation drivers comprise competency drivers, leadership drivers and organisation drivers (Bertram *et al.,* 2011). Competency drivers consist of staff selection, training, coaching, and performance assessment (Fixsen *et al*., 2005). According to Fixsen *et al*. (2005), leadership drivers include adaptive leadership and technical leadership. Organisation drivers include facilitative administration, decision-making data support systems, and systems-level interventions (Bertram *et al*., 2011a). For further description refer to Chapter 2, Section 2.4.2.

The conclusions drawn from the results addressing the second objective of the study are outlined below.

5.4.1 Competency drivers

Bertram *et al*. (2014) listed competency drivers as selection, training, coaching and performance assessment.

To investigate competency drivers, it is important to start with the years of experience and the highest level of education attained by the healthcare professionals. More DHMT healthcare professionals, percentage-wise, 14 (51.9%) had 10 years of work experience than PHC managers 30 (34.5%) and PHC healthcare professionals 14 (48.3%) (refer to Chapter 3, Section 3.2).

Regarding the highest level of education attained, healthcare professionals at the HIV/AIDS programme (n=5) had a professional degree and one had a master's degree in addition to a professional degree. DHMT healthcare professionals 19 (70.4%), PHC managers 25 (29.1%) and PHC healthcare professionals 20 (71.4%) had a professional degree as the highest level of education. Most PHC managers 54 (62.8%) had a diploma as their highest level of education attained (refer to Chapter 3, Section 3.3). It is therefore concluded that healthcare professionals at all levels had requisite qualification and experience.

Recommendation

The healthcare system in Lesotho should recognise qualification and experience when selecting healthcare professionals for management positions at the PHC facilities.

5.4.1.1 Selection

The results show that the HIV/AIDS programme manager (n=1) indicated that there was someone selected to be responsible for the implementation of HIV/AIDS treatment guidelines (refer to Chapter 3, Section 3.6.2 and Chapter 5, Section 5.3.2). It is therefore concluded that healthcare professional at the DHMT and PHC managers played a role in the implementation of treatment guidelines.

Recommendation

It is, therefore, recommended that healthcare professionals at the HIV/AIDS programme should select a DHMT healthcare professional who will take responsibility to oversee the implementation of HIV/AIDS treatment guidelines at all PHC facilities in the district. It is also recommended that healthcare professionals at the HIV/AIDS programme stipulate specific roles for healthcare professionals at the DHMT and PHC facilities for the implementation of HIV/AIDS treatment guidelines.

5.4.1.2 Training

All healthcare professionals (n=5) at the HIV/AIDS programme were trained by the WHO in a week-long training workshop; they were also trained to train other healthcare professionals. At the DHMT level, healthcare professionals 15 (55.6%) were trained for one week, by healthcare personnel from the HIV/AIDS programme and other non-governmental organisations (refer to Section 3.6.1). Some DHMT healthcare professionals 6 (22.2%) received training to train other healthcare professionals. Similarly, PHC managers 45 (51.7%) were trained through workshops, and some of them 41 (47.1%) were also trained to train other healthcare professionals (refer to Section 3.6.1). Healthcare professionals 22 (75.9%) at the PHC facilities were also trained about the changes made to the 2016 HIV/AIDS treatment guidelines. Damschroder *et al*. (2009:50) state that money, training and education are some of the available resources. Damschroder *at al.* (2013) later suggest that training is an important source of information and knowledge. The healthcare professionals at the PHC facilities who did not attend training workshops were trained by those who attended the training (refer to Chapter 3, Section 3.6.1). It is therefore concluded that training took place at all levels even though more training in needed et the PHC facilities.

Recommendation

It is recommended that the HIV/AIDS programme level healthcare professionals should plan training whenever new changes in the HIV/AIDS treatment guidelines are implemented, and train trainers at the DHMT and PHC managers. Periodic training should take place at PHC facilities whenever changes in the HIV/AIDS treatment guidelines are implemented.

5.4.1.3 Coaching

Fixsen *et al*. (2009:531) state that training alone is not enough to develop confidence and competence in healthcare professionals, coaching is also needed. Coaching supports healthcare professionals in trying out new skills or abilities (Bertram *et al*., 2014:18). Coaching took place at the PHC level when PHC managers 57 (65.5%) (refer to Annexure M) monitored healthcare professionals in the use of treatment guidelines for patient care and treatment and ensured that relevant ART registers were filled out correctly (refer to Section 3.6). Bertram *et al*. (2014:18) suggest a coaching plan that will include format, frequencies and focus is part of best practice in coaching. Supervisors and coaches should have undergone selection, training and coaching for accountability in enhancing the development of staff (Bertram *et al*., 2014:18).

Recommendation

It is, therefore, recommended that healthcare professionals at the HIV/AIDS programme level must draw up a coaching plan and provide training on how to coach others to the DHMT healthcare professionals who, in turn, will coach and impart coaching skills to PHC managers.

5.4.1.4 Performance evaluation

Performance evaluation acts as a barometer for how well implementation infrastructure functions in promoting competence and confidence (Bertram *et al*., 2011). As indicated in Chapter 3 Section 3.6, a performance evaluation of healthcare professionals was carried out using task agreements. The HIV/AIDS programme manager reported the presence of the task agreement and indicated that it was used to evaluate the performance of DHMT healthcare professionals. DHMT healthcare professionals 17 (63.0%) also carried out a performance evaluation by using task agreements. PHC managers 42 (51.2%) indicated that they used task agreements to evaluate the performance of healthcare professionals using the 2016 HIV/AIDS treatment guidelines to treat HIV/AIDS patients (refer to Chapter 3, Section 3.6.2). It is therefore concluded that task agreements are used at all levels to for performance evaluation.

Recommendation

Task agreements for performance evaluation should be used between employer and employee. Performance evaluation can also be evaluated through other forms of evaluation such as monitoring and evaluation; however, such forms need to be communicated well and be available at all times at the DHMT and PHC facilities. It is, therefore, recommended that task agreements should include the implementation and use of future HIV/AIDS treatment guidelines for healthcare professionals in clinical practice.

5.4.2 Leadership drivers

Leadership behaviours include being supportive, providing feedback, communicating clearly, being a role model and encouraging employee development. These are important in the implementation process (Mosson *et al*., 2018). Proctor *et al*. (2013) encourage clinical supervision via phone to answer questions, review case implementation, make suggestions and provide encouragement. According to Waltz *et al*. (2015:109), one of the 73 implementation strategies is the provision of clinical supervision, audit and feedback. Successful implementation requires leadership support (RNAO, 2012:124). Leaders are

normally faced with two types of challenges, one is a technical challenge and the other one is an adaptive challenge (Heifetz& Linsky, 2002).

5.4.2.1 Technical leadership

According to Heifetz and Linsky (2002), technical challenges are well defined, the solutions are known, and anyone with adequate expertise and organizational resources can solve them (refer to Chapter 2, 2.4.2). This means that supervision and feedback are part of the technical leadership because the challenges emanate from these activities can be manager under technical leadership.

Battilana *et al*. (2010:422) specify that managerial tasks such as planning, supervising change and providing resources are also crucial to support the implementation of change. Healthcare professionals at the HIV/AIDS programme (n=5) supervised DHMT healthcare professionals every quarter for one week. They reported that they (n=5) provided feedback before they left the DHMT (refer to Chapter 3, Section 3.7). Healthcare professionals from the DHMT 23 (88.5%) supervised PHC managers (23 (85.2%) at the PHC facilities every month for one day. DHMT healthcare professionals 23 (85.2%) also indicated that they provided feedback to the PHC managers before they left the PHC facility (refer to Chapter 3, Section 3.7). PHC managers 52 (61.2%) supervised healthcare professionals who provide daily patient care and treatment. PHC managers 54 (65.9%) also indicated that they provide feedback to the healthcare professionals (refer to Chapter 3, Section 3.7).

It can be concluded that supervision and feedback are provided which is a strength that can be used to build on. RNAO (2012:107) stipulate feedback mechanisms, for instance, balanced scorecard indicators and specific performance audits at a local level, practice requirements within professional regulatory bodies at regional level and accreditation standards at national level. Gardner *et al*. (2010) specify that feedback can be enhanced with specific performance targets to allow for comparisons between the target and current performance.

Recommendation

It is, therefore, recommended that in future implementation of HIV/AIDS treatment guidelines, healthcare professionals at the HIV/AIDS programme level should develop implementation assessment tools that can be used during supervisory visits to both the DHMT and PHC facilities. Assessment tools must be used for both supervision and feedback with performance

targets in order to have similar information at all levels for future planning and even for remedial actions.

5.4.2.2 Adaptive leadership

Heifetz and Linsky (2002) define leadership according to the type of challenges that are facing the organisation. Adaptive leadership address more complex challenges that require expertise that may not be available. “Adaptive leadership is based on the premise that leadership is more of a process rather than individual personal capabilities” (Heifetz *et al.*, 2004) (refer to Chapter 2, 2.4.2). For this study, the adaptive leadership is used for conflict management and performance related problems.

Healthcare professionals at the HIV/AIDS programme level (n=5) indicated that they provide motivational activities to their staff. At the PHC facilities, the PHC managers 51 (61.4%) also indicated that they motivate their staff with activities such as staff picnics (refer to Chapter 3, Section 3.8). All healthcare professionals at the HIV/AIDS programme level (n=5) indicated that good performance of healthcare professionals is rewarded. A minority of PHC managers 28 (34.6%) also reported that performance-based financing was used to reward good performance (refer to Chapter 3, Section 3.8). In transactional leadership, rewards are considered after achieving mutually agreed upon goals between managers and employees (Mosson *et al*., 2018). Poor performance was also managed at the HIV/AIDS programme, DHMT and PHC facilities through various ways including holding discussions and workshops (refer to Chapter 3, Section 3.8). Conflict resolution was carried out at the HIV/AIDS programme, DHMT and PHC facilities by holding discussions and using treatment guidelines to resolved arguments (refer to Chapter 3, Section 3.8). Working relationships were maintained after conflict (refer to Chapter 3, Section 3.8).

It is therefore concluded that performance based financing was given to keep high level of performance at the PHC facilities even though it had not yet covered all PHC facilities. It can also be concluded that conflict management was carried out whenever there was a conflict, and necessary referrals were made if more action was needed.

Recommendation

It is, therefore, recommended that excellent performance at the PHC facilities be consistently rewarded with performance-based financing. It is also recommended that healthcare professionals at the HIV/AIDS programme level should plan motivation activities and share

this plan with healthcare professionals at the DHMT and PHC facilities so that regular motivational activities can be carried out. Training is required to ensure that PHC managers can handle poor performance and conflict management at the PHC facilities.

5.4.3 Organisation drivers

Organisation drivers are a core component of implementation drivers and include facilitative administration, system-level interventions and decision-support data systems (Bertram *et al.,* 2014) (refer to Chapter 2 Section 2.4.2). This study focused on the latter. Implementation teams should be given data reports that can be easily understood to assist in making timely decisions in order to improve target population outcomes and implementation outcomes (Bertram *et al.*, 2011).

5.4.3.1 Report

At the PHC facilities, PHC managers and healthcare professionals indicated that nurses and data clerks collect data under the supervision of PHC managers. The data were used to write monthly reports. Electronic and hard copies of the reports were generated by healthcare professionals 64 (75.3%), sent to the HIV/AIDS programme (n=5), through the DHMT 25 (92.6%). At the HIV/AIDS programme and DHMT levels, healthcare professionals indicated that the information from the reports was used for planning, procurement, forecasting, budgeting and problem-solving (refer to Chapter 3, Section 3.10). It is therefore concluded that routine reporting takes place and is informed by data collected at the PHC facilities.

5.4.3.2 Operational research or implementation research

Harrison *et al*. (2013:49) show that local information about care and treatment may provide evidence that can be more applicable to a local setting. Operational research is mentioned by the HIV/AIDS programme manager (n=1) and DHMT healthcare professionals 9 (33.3%) and but not at PHC levels. The use of operational research results to review HIV/AIDS treatment guidelines was stated by the HIV/AIDS programme manager (n=1) and DHMT healthcare professionals 3 (11.5%) (refer to Chapter 3, Section 3.10).

Recommendation

It is, therefore, recommended that applicable data be collected and analysed to inform decisions. This data can become part of rapid assessments that inform policy decision-making and improve treatment guidelines. Operational or implementation research was scarcely

reported and it is recommended that the HIV/AIDS programme level healthcare professionals recognise this and budget for it in order to benefit from implementation of HIV/AIDS treatment guidelines..

5.5 Conclusions and recommendations formulated regarding the third objective: Implementation barriers

This section covers conclusions drawn from the identified barriers to the implementation of the HIV/AIDS treatment guidelines at the different levels of the healthcare system in Lesotho namely the HIV/AIDS programme, DHMT, and PHC facilities.

There are also key barriers that were identified by all the HIV/AIDS programme, DHMT and PHC facilities (refer to Chapter 3, Section 3.7). If more than 50% of the healthcare professionals at each level agreed that the factor is a barrier, then this study regarded the factor as a barrier (Likert score of 4 and 5). The factor was not considered a barrier if 50% or more of healthcare professionals chose a Likert score of 1 and 2. If 50% of health professionals chose 3 on the Likert score, they abstained from answering and stating whether there was agreement or disagreement (Likert score of 3).

The main barriers were categorised as personnel, knowledge and competency, resource-related, financially-related and system-related factors (refer to Table 5.1).

5.5.1 Summary of identified implementation barriers according to level

The following conclusion can be formulated based on the summary Table 5.1.

Table 5-1: Identified barriers according to level

			PHC level	
Barriers	**HIV/AIDS programme level**	**DHMT level**	**PHC managers at the PHC facilities**	**Healthcare professionals at PHC facilities**
Personnel factors	Lack of nurses and medical practitioners at the hospitals of CHAL Lack of nurses and medical practitioners at the PHC clinics of MOH Lack of pharmacy personnel at the PHC clinics of MOH	Lack of nurses and medical practitioners at the hospitals of MOH Lack of pharmacy personnel at the PHC clinics of MOH Lack of pharmacy personnel at the PHC clinics of CHAL Lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines The reluctance of healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	Lack of nurses and medical practitioners at the hospitals of CHAL Lack of nurses and medical practitioners at the hospitals of MOH Lack of nurses and medical practitioners at the PHC clinics of MOH Lack of nurses and medical practitioners at the PHC clinics of CHAL Lack of pharmacy personnel at the PHC clinics of MOH Lack of pharmacy personnel at the PHC clinics of CHAL The reluctance of healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	Lack of nurses and medical practitioners at the PHC clinics of MOH Lack of nurses and medical practitioners at the PHC clinics of CHAL Lack of pharmacy personnel at the PHC clinics of MOH Lack of pharmacy personnel at the PHC clinics of CHAL Lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines The reluctance of healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines

			PHC level	
Barriers	**HIV/AIDS programme level**	**DHMT level**	**PHC managers at the PHC facilities**	**Healthcare professionals at PHC facilities**
Resource-related factors	No or unreliable internet access No or unreliable e-mail services	No or unreliable internet access Lack of well-designed implementation research to support decisions	No or unreliable internet access Lack of budget for new posts for healthcare personnel Lack of integrated health information systems for storing and retrieving of data Lack of technology (such as computers) No or unreliable internet access No or unreliable e-mail services Lack of drug information systems	Lack of time No or unreliable internet access Lack of relevant and current reference books
Financially-related factors	Lack of funds to acquire highly technologic health information systems Lack of budget for new posts for healthcare personnel	Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation Lack of budget for new posts for healthcare personnel	Lack of funds to acquire highly technologic health information systems Lack of budget for new HIV/AIDS treatment guidelines implementation Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	Lack of budget for new posts for healthcare personnel

			PHC level	
Barriers	**HIV/AIDS programme level**	**DHMT level**	**PHC managers at the PHC facilities**	**Healthcare professionals at PHC facilities**
System-related factors	Lack of well-designed implementation research to support decisions.	Fragmentation of the healthcare system Lack of good practice standards Poor activities coordination by the managers Shortage of mentors and role models to encourage healthcare professionals to be innovative Management-related problems	Fragmentation of the healthcare system Lack of good practice standards Poor activities coordination by the managers	Fragmentation of the healthcare system Lack of good practice standards Poor activities coordination by the managers
Knowledge and competency factors	Insufficient management skills	Insufficient management skills Inadequate communication skills Poor time management Insufficient organisational skills Insufficient management skills Being unaccustomed to document outcomes of HIV/AIDS treatment guidelines	Insufficient management skills Insufficient education and training Insufficient clinical knowledge and skills Inadequate communication skills Poor time management Insufficient organisational skills Insufficient management skills	Insufficient management skills Being unaccustomed to document outcomes of HIV/AIDS treatment guidelines

5.5.2 Overall implementation barriers as identified by healthcare professionals at all levels

Barriers to the implementation of HIV/AIDS treatment guidelines in Lesotho as agreed by healthcare professionals at the HIV/AIDS programme level, DHMT level and PHC facilities are presented in the following organogram. These were identified by 50% or more healthcare professionals in all level.

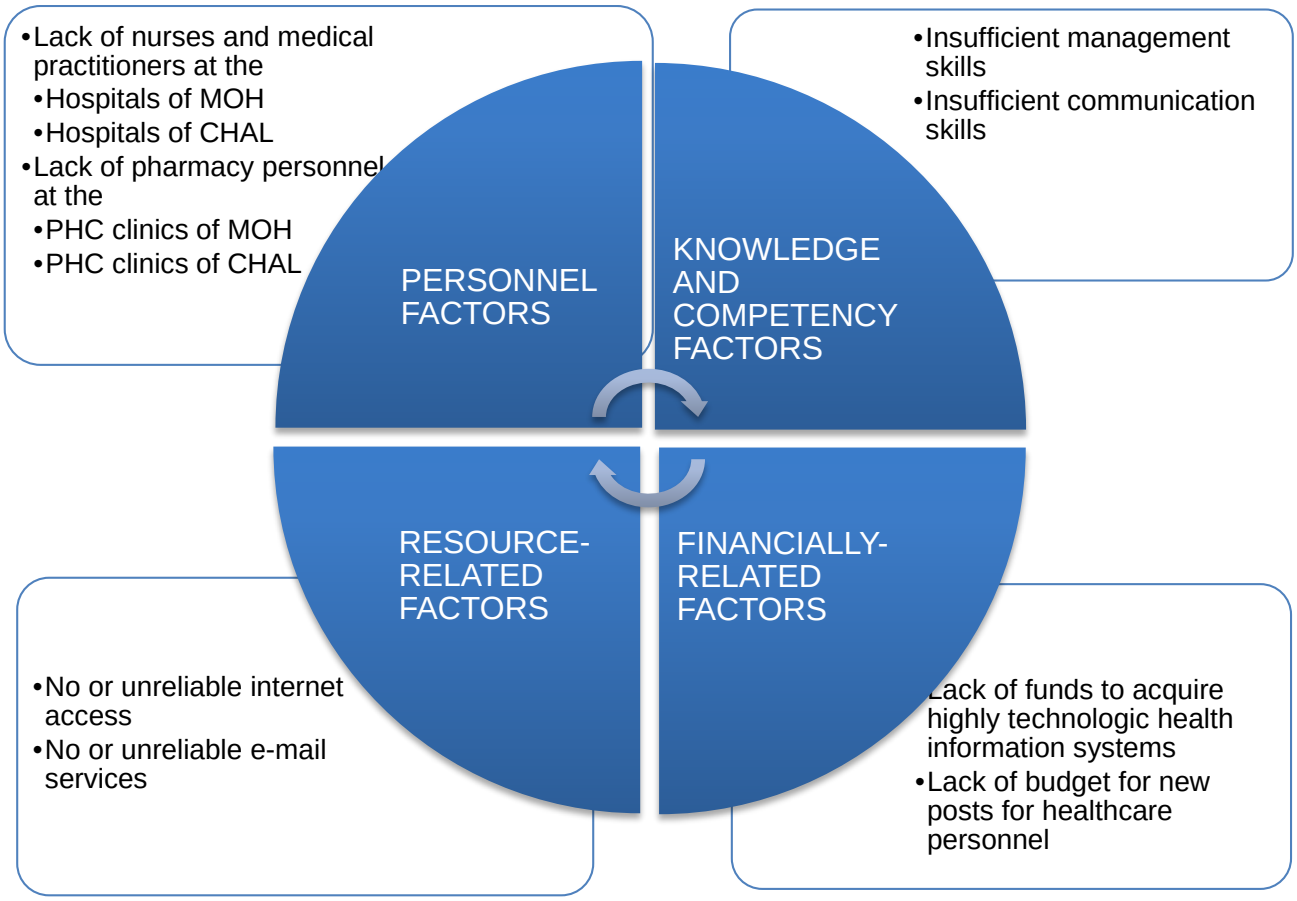

Figure 5-1: Implementation of HIV/AIDS treatment guidelines barriers identified by healthcare professionals at all levels

Conclusions from implementation barriers were drawn. Figure 5-1 shows barriers to the implementation of HIV/AIDS treatment guidelines that were identified and common at the HIV/AIDS programme, the DHMT and PHC facilities. Some barriers were only identified by healthcare professionals at some levels because they were more applicable to their situation, for example, lack of shared planning at the HIV/AIDS programme level (for the implementation of new HIV/AIDS treatment guidelines) was identified as a barrier by healthcare professionals

at the DHMT, PHC managers and PHC healthcare professionals. However, healthcare professionals at the HIV/AIDS programme level did not identify this as a barrier.

Lack of time was identified as a barrier by the PHC healthcare professionals only, the DHMT healthcare professionals and PHC managers instead identified poor time management as a barrier to implementation of HIV/AIDS treatment guidelines. Taba *et al.* (2012:455) identify lack of time and resources as major barriers to the use of treatment guideline. Lack of relevant and current reference books was identified as a barrier by PHC healthcare professionals; this was because they used these books for patient care and treatment of HIV/AIDS; however, DHMT healthcare professionals disagreed that this was a barrier. In a study carried out in Lesotho, barriers to ART initiation and retention in TB/HIV patients were identified, assessed and addressed (Howard *et al*., 2016).

Recommendations

It is recommended that the healthcare professionals at the HIV/AIDS programme level should be informed about the identified barriers and plan to address them. The plan should include training DHMT healthcare professionals who, in turn, will train PHC managers at the PHC facilities. The training should be a continuous process as most of the identified barriers can be addressed through training in organisational, management, coordination and communication skills.

Recommendations

The following solutions are proposed in Table 5.2 to address the identified barriers at any level.

Table 5-2: Identified barriers, which affect the implementation of HIV/AIDS treatment guidelines, and solutions

Category of barriers	Barrier	Solution
Personnel factors	Lack of nurses and medical practitioners at the hospitals of CHAL	Create positions and hire nurses and medical practitioners at the CHAL hospitals
	Lack of nurses and medical practitioners at the PHC clinics of MOH	Create positions and hire nurses and medical practitioners at the PHC clinics at MOH
	Lack of pharmacy personnel at the PHC clinics of MOH	Create positions and hire pharmacy personnel at the PHC clinics of MOH
	Lack of pharmacy personnel at the PHC clinics of CHAL	Create positions and hire pharmacy personnel at the PHC clinics of CHAL
	Reluctance of healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	Train to allay fears and reluctance of healthcare professionals
Knowledge and competency factors	Insufficient management skills	Carry out management skills training
	Inadequate communication skills	Carry out training on communication skills
	Poor time management	Use a scheduled with time-bound activities
	Insufficient organisational skills	Train professionals on organisational skills
	Being unaccustomed to document outcomes of HIV/AIDS treatment guidelines	Train to familiarise professionals with outcomes of HIV/AIDS treatment guidelines
Resource-related factors	No or unreliable e-mail services	Get company-run emails for CHAL and MOH facilities
	No or unreliable internet access	Increase internet coverage at the different levels of the healthcare system and in health care facilities.

Category of barriers	Barrier	Solution
	Lack of funds to acquire high technological health information systems	Acquire a budget and purchase highly technologic health information systems
	Lack of well-designed implementation research to support decisions	Include the results of implementation research in the plan for implementation
	Lack of time	Evaluate activities that take more time and routine and consider task shifting. Develop time-management skills of healthcare facilities
Financially-related factors	Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	Allocate a budget for training on changes in treatment guidelines
	Lack of budget for new posts for healthcare personnel	Create posts, allocate budget and recruit healthcare professionals
System-related factors	Fragmentation of healthcare system	Identify areas of fragmentation and address accordingly
	Lack of good practice standards	Set practice standards for the implementation of new and changed HIV/AIDS treatment guidelines
	Poor coordination of activities by the managers	Train managers on the coordination of activities
	Shortage of mentors and role models to encourage healthcare professionals to be innovative	Create and train role models and reward good performance.
	Management-related problems	Train healthcare professionals on management skills

Source: Author's own construction

5.6 Conclusions and recommendations formulated regarding the fourth objective: Implementation framework

The HIV-AIDS treatment guidelines implementation framework for resource limited setting was developed using four selected implementation strategies (Powell *et al.,* 2015) and seven constructs selected from other frameworks (refer to Chapter 4, Table 4-1, and 4-2) and the results of the study were incorporated in each relevant construct. The selected strategies were as follows:

Strategy 1 - develop a formal implementation plan.

Strategy 2 - assess for readiness and identify barriers and facilitators

Strategy 3 - capture and share local knowledge.

Strategy 4 - stage implementation scale-up.

Fixsen *et al*. (2005) describe leadership drivers as adaptive and technical leadership (refer to Chapter 2, Section 2.5.2.2), and this was used for the empirical study tools, however, knowledgeable, supportive, pro-active and perseverant (refer to Chapter 2, Section 2.3.4) were found to be more suitable for resource limited settings because they are suitable for implementing new changes in treatment guidelines.

Planning

Leadership must develop an implementation plan and share it with all relevant levels. They plan, supervise and provide resources to support the implementation of change (Battilana *et al*., 2010:422). The implementation plan must contain actionable words that are measurable. It has to be visible, and milestones measured as activities in the plan are completed (refer to Chapter 2, Section 2.5.2.1).

Evidence

The evidence used for the HIV/AIDS treatment guidelines comes from the World Health Organization (WHO) research which is based on high-quality research (WHO, 2015:20) (refer to Chapter 2, Section 2.5.2.4). Local information may provide evidence that can be more applicable in a local setting (Harrison *et al*., 2013:49).

Facilitation

Facilitation is a technique by which someone makes things easier for others and in this case to accept change and it is carried out by appropriate external and internal facilitators (Rycroft-Malone *et al.*, 2002:174; Stetler *et al.*, 2011:13). It is worth mentioning that training and coaching were used for development of the questionnaires, however, facilitation seems to have a wider role in the implementation of treatment guidelines in the resource limited settings.

Executing

Quality of execution comprises the planned course of action, timeliness of task completion, and engagement of key individuals involved in the implementation process (Carroll *et al*., 2007; Pearson *et al*., 2005:978).

Implementation outcome

According to Proctor *et al*. (2009:24), the implementation outcomes are acceptability, adoption, appropriateness, costs, feasibility, fidelity, penetration and sustainability. These describe how treatment guidelines should be before they could be implemented and this can also measure the implementation outcome.

The framework (GIFRS) also included an evaluation tool to assess implementation of HIV/AIDS treatment guidelines at the PHC facilities (refer to Chapter 4, table 4-3). Therefore, is concluded that a framework was developed using literature and research findings from this study.

Recommendation

It is recommended that healthcare professionals should consider using the framework to guide the future implementation of HIV/AIDS treatment guidelines.

5.7 General recommendations

The following recommendations are proposed in accordance with the objectives of the study.

5.7.1 Recommendations for training institutions

Develop training modules to improve management skills of healthcare professionals with special emphasis on reporting, recording and use of data for decision-making, performance assessment, conflict management and basic implementation skills.

5.7.2 Recommendations for the HIV/AIDS programme

- Develop an implementation plan and share it with all the stakeholders.
- Assign a specific healthcare professional with the responsibility to oversee implementation plans at the HIV/AIDS programme level and at each DHMT.
- Address all identified barriers to the successful implementation of HIV/AIDS treatment guidelines.
- Ensure that training on changes made to the HIV/AIDS treatment guidelines covers all healthcare professionals at all levels of the healthcare system and at all the implementation sites.
- Carry out a performance assessment, reward good performance and give more support to healthcare facilities with poor performance.
- Use the new implementation framework for a resource-limited setting to evaluate implementation success and treatment outcomes.

5.7.3 Recommendations for the DHMT

- Share the implementation plan with all the stakeholders.
- Address all identified barriers to the successful implementation of HIV/AIDS treatment guidelines at the DHMT level.
- Ensure that training on changes made to the treatment guidelines covers all healthcare professionals, including those at PHC facilities.
- Carry out a performance assessment, reward good performance and give more support to healthcare facilities with poor performance.
- Use the new implementation framework for a resource-limited setting to evaluate implementation success and treatment outcomes.

5.7.4 Recommendations for the PHC

- Address all identified barriers to the successful implementation of HIV/AIDS treatment guidelines at the PHC level.

- Ensure that training on changes made to the HIV/AIDS treatment guidelines covers all healthcare professionals at the PHC facility.

- Carry out a performance assessment, reward good performance and give more support to healthcare professionals with poor performance.

- Use the new implementation framework for a resource-limited setting to evaluate implementation success and treatment outcomes.

5.7.5 Recommendations for resource-limited countries

- Develop an implementation plan with stakeholders when implementing new changes in the guideline and share it with all the stakeholders.

- Assign a specific healthcare professional with the responsibility to oversee implementation plans at the different levels of the healthcare system

- Identify and address all barriers to the implementation of HIV/AIDS treatment guidelines.

- Ensure that training on changes made to the treatment guidelines covers all healthcare professionals at all levels of the healthcare system and at all the implementation sites.

- Carry out a performance assessment, reward good performance and give more support to healthcare facilities with poor performance.

- Use the new implementation framework for a resource-limited setting to evaluate implementation success and treatment outcome.

5.7.6 Recommendations for research

- The current research used implementation processes (CFIR), and drivers (NIRN). There were overlaps between the two, for example with engaging and selection, and also with performance evaluation and with competency driver's performance evaluation. Therefore research is needed in a resource-limited setting and also in Lesotho using GIFRS.

- In depth discussions are needed to guide on how to address implementation barriers in a resource-limited setting, therefore after identifying barriers it is worthwhile to address them according to the capacity and capability of the local healthcare system. Therefore a qualitative research on implementation barriers is recommended.

5.8 Limitations of the study

The following limitations were experienced during the study implementation and the data analysis at various levels.

There were questions with a large number of no responses therefore the results of this study cannot be generalised.

5.8.1 HIV/AIDS programme

At the HIV/AIDS programme level, there were only five healthcare professionals who managed the HIV/AIDS health programme during the time of data gathering. Because the study population was small (n=5), the results were presented only in numbers.

5.8.2 DHMT

An important limitation at the DHMT level was that interviews with DHMT healthcare professionals were, in certain cases, carried out after several postponements due to their busy outreach schedule and this affected the response rate of the data collection.

5.8.3 PHC facilities

5.8.3.1 PHC managers

Limitations related to the self-administration of questionnaires during PHC managers' quarterly meetings were the following:

- During data collection, there was a transfer of pharmacists from one district or one facility to another, and some were transferred to the DHMT from the PHC facility, therefore one would have filled questionnaire at their previous work place and could not fill again at the different level.

- In one district (Quthing), the district medical officer did not grant permission to collect data during the time of data collection, even though the researcher met all ethics requirements. Therefore, data collection did not take place.

- DHMT meetings were postponed numerous times in three districts. The researcher was asked to leave the questionnaires so that when the meeting was finally held the questionnaires would be given to the PHC managers. The healthcare professionals who

said they would hand over the questionnaires did not distribute them; therefore, they were collected unanswered.

5.8.4 Healthcare professionals in PHC facilities

The following limitations were experienced with the data gathering process related to the distribution of questionnaires to individual healthcare professionals at the PHC facilities. In the districts, questionnaires were taken to the clinics by the researcher. The following was observed:

- PHC clinics were overcrowded when questionnaires were delivered to healthcare professionals.
- Questionnaires were left to be filled when healthcare professionals had the time.
- In some clinics, two sets of questionnaires were distributed as the questionnaires left previously were missing.
- Several visits were made to collect the questionnaires, and they had still not been filled out. Others were not filled out and were collected after three or four visits to the PHC facilities.
- The motivation for filling questionnaires was low, perhaps because the healthcare professionals were overworked, but even when healthcare professionals wanted to fill them out, the task had to compete with patient-care services and report writing.
- In four hospitals where questionnaires were delivered by the DHMT and later by the researcher – despite reminders and visits – no filled questionnaires were found. In one hospital, the researcher could not find the person who kept the questionnaires. In another hospital, they returned them unfilled.
- There are only a few medical practitioners in Lesotho. Most HIV/AIDS care and treatment are carried out by nurses who were also supposed to be district health managers. Some of them were both district health managers and district medical officers and, therefore, they could not participate in the study.
- The coverage for the study population was, geographically-speaking, good, and mountainous districts such as Mokhotlong, Thaba-Tseka and Qacha's Nek were included. There was a low response rate in Mafeteng and Berea. There was better response in the

Mohale's Hoek, Maseru and Leribe districts. No response was received from the Butha-Buthe and Quthing districts because permission to collect data was not given by the district medical officers.

5.9 Chapter summary

Chapter 5 is the concluding chapter of the study. This chapter addressed conclusions and recommendations regarding identified implementation processes, implementation drivers and implementation barriers. An implementation framework developed for the implementation of HIV/AIDS treatment guidelines in a resource-limited setting was outlined. Relevant recommendations were made for the HIV/AIDS programme, the DHMT and PHC facilities as well as for resource-limited settings.

Besides the conclusions and recommendations, the chapter also addressed the study limitations which were mainly related to data collection at the HIV/AIDS programme, the DHMT and the PHC facilities.

The study has contributed new knowledge by identifying barriers to HIV/AIDS treatment guidelines implementation in Lesotho as a resource-limited setting. The development of GIFRS as a framework that can be used forthcoming implementation of treatment guideline that has a tool that can determine whether the implementation succeeded or not, and also patient care and treatment outcome.

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ANNEXURE A: QUESTIONNAIRE: HIV/AIDS PROGRAMME -FACE-TO-FACE INTERVIEW

HREC Stamp

QUESTIONNAIRE: HIV/AIDS PROGRAMME -FACE-TO-FACE INTERVIEW

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

Research entity: Medicine Usage in South Africa
Faculty of Health Sciences
North-West University (Potchefstroom Campus)

Ethics Number: NWU- NWU-00136-17-S1

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

Questionnaire: HIV/AIDS Programme

Questionnaire number				

Please mark your answers with a cross in the appropriate block.
Note that more than one option may be selected in certain questions.

1.1 DEMOGRAPHIC AND EMPLOYMENT INFORMATION

1.1.1 What is your current age? _____ (years)

1.1.2 What is your gender?

Gender	**Please mark one with an X**
Male	0
Female	1

1.1.3 What is the highest level of education that you have completed?

Highest level of education	**Please mark one with an X**
Primary phase	1
Secondary phase	2
High school phase	3
Diploma at a college	4
Bachelor's degree (non-professional)	5
Master's degree	6
Professional degree e.g. Nursing	7
PhD	8
Other, please specify.	9

1.1.4 How many years of experience do you have in any of the following sectors?

Area of work	Number of years*
i) In the Ministry of Health – Lesotho	
ii) In the Christian Health Association of Lesotho (CHAL)	
iii) In a private health facility	
iv) In your current position in the HIV/AIDS programme	
v) Other, please specify	

**Fill in 0 if you have never worked in this area.*

1.1.5 Indicate your profession

Profession	Please mark one with an X
Medical practitioners	1
Specialist in Medicine	2
Nurse	3
Pharmacist	4
Other profession, please specify	5

1.1.6 Indicate your current position at the HIV/AIDS programme

_____

1.1.7 What are your specific responsibilities (or task agreements) in the HIV/AIDS programme?

_____

_____

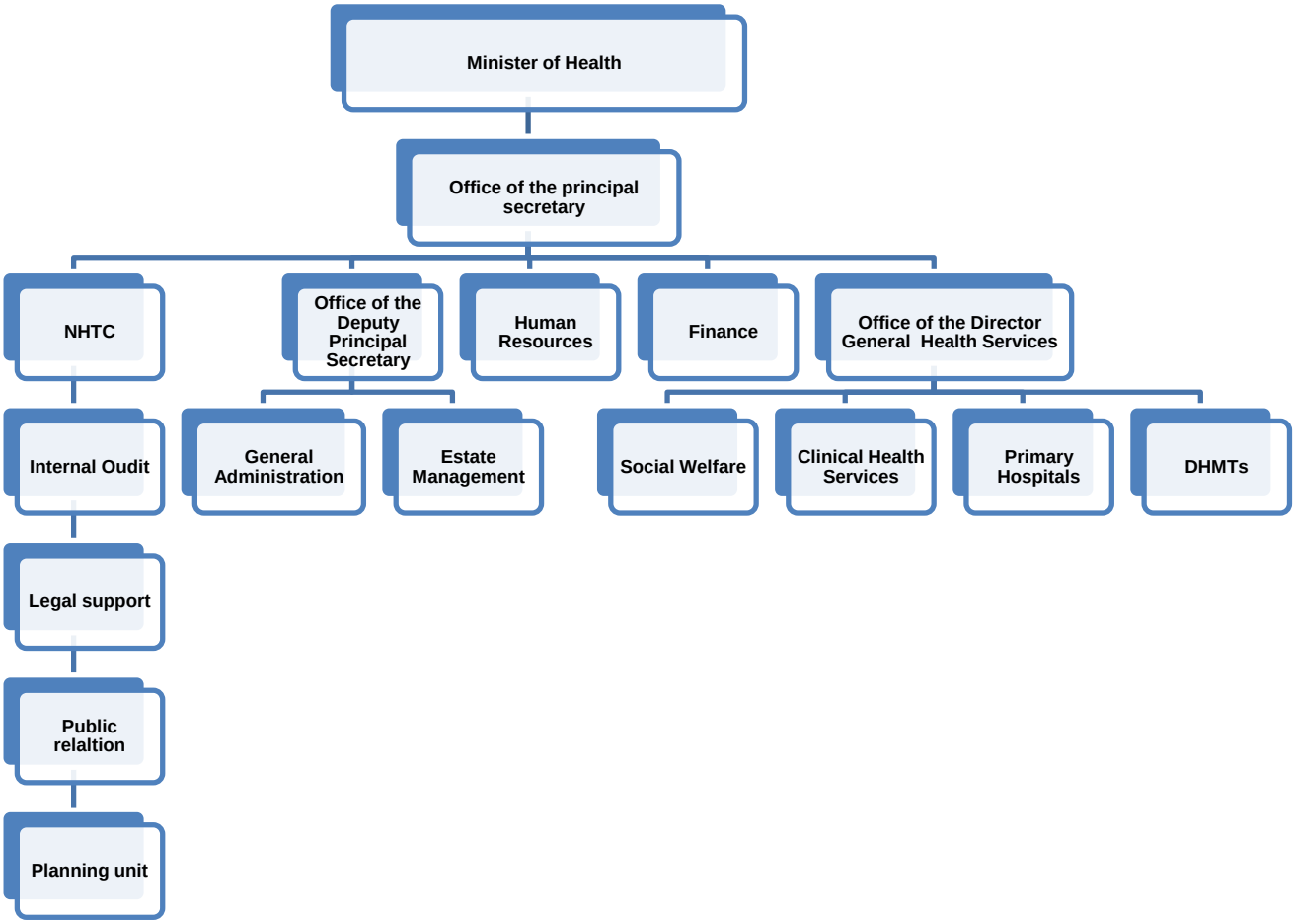
_____

_____

_____

1.2 HUMAN RESOURCES (STAFFING AND LEADERSHIP) IN THE HIV/AIDS PROGRAMME

1.2.1 Please indicate or include on the organogram of the Ministry of Health the positions allocated for the HIV/AIDS programme?



1.2.2 Are all the positions currently filled in the HIV/AIDS programme?

Response	Please mark with an X
Yes	1
No	0

1.2.2.1 If **no**, which positions are not filled?

_____

_____

1.2.2.2 What are the reasons for not filling the vacant post?

Reason for not filling the positions	Yes	No
Budget problems	1	0
Lack of a successful candidate	1	0
Position is not yet advertised.	1	0
Ministry of Health decided not the fill the post	1	0
Other (please specify)	1	0

1.2.2.3 Who carries out the duties attached to the vacant post?

_____

_____

_____

1.2.3 When were the most recent (latest) HIV/AIDS treatment guideline implemented? _____ (year)

1.2.3.1 Were you involved in the implementation of most recent (latest) HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

If no, go to question 1.3

1.2.3.2 If **yes**, did you receive any training specific to the implementation of the HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

If no, go to question 1.3

1.2.3.3 If **yes,** who provided the training?

_____

_____

1.2.3.4 What was the length of training when most recent (latest) HIV/AIDS treatment guidelines were implemented?

Duration of the training	**Please mark with an X**
Less than one week	1
One week	2
Two weeks	3
Three weeks	4
Four weeks or a month	5
More than a month	6
Other, please specify	7

1.2.3.5 Which topics were covered in the training when the most recent (latest) HIV/AIDS treatment guidelines were implemented?

Response	**Please mark with an X**
i) Overview of the HIV/AIDS treatment guidelines.	
ii) Comparison between the previous and the new HIV/AIDS treatment guidelines.	
iii) Changes in the new HIV/AIDS treatment guidelines.	
iv) New logistical requirements (a drug with low temperature storage) in the new HIV/AIDS treatment guidelines.	
v) New clinical management requirements (e.g. regimen changes, laboratory test, and monitoring aspects) in the new HIV/AIDS treatment guidelines.	
vi) New staff requirements (e.g. laboratory personnel who know how to operate new test machines).	
vii) Importance of adherence to current treatment guidelines.	
viii) Implementation plan of HIV/AIDS treatment guidelines.	
ix) Other, please specify.	

1.2.3.6 Evaluation and certification of the training programme when the latest HIV/AIDS treatment guidelines were implemented.

Evaluation and certification	**Yes**	**No**
i) Were you given an evaluation form to complete after the training?	1	0
ii) Was certification provided to you after the training?	1	0
iii) Was only a proof of attendance provided to you after the training?	1	0

1.2.3.7 Were you trained to train others with regard to the most recent HIV/AIDS treatment guidelines implementation?

Response	**Please mark with an X**
Yes	1
No	0

1.2.3.8 If **yes**, did you train others before the implementation of the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.2.3.9 If **no**, what was the reason for not providing training before the implementation of the most recent HIV/AIDS treatment guidelines?

Response	**Yes**	**No**
i) I was not trained to do the training	1	0
ii) It was no part of my job description or task agreement	1	0
iii) There was not enough time to do the training before the new treatment guidelines was implemented	1	0
iv) The training programme of all personnel was part of the official implementation programme of the MOH Lesotho	1	0
v) Other reason (specify)	1	0

1.3 REVIEW OF THE HIV/AIDS TREATMENT GUIDELINES

1.3.1 In which year was the last review of the HIV/AIDS treatment guidelines?

_____ (year)

1.3.2 Describe the process of reviewing the HIV/AIDS treatment guidelines.

_____
_____
_____
_____
_____

1.3.3 Which sources of information are used when reviewing HIV/AIDS treatment guidelines?

_____
_____
_____
_____
_____

1.3.4 Describe the technical working group members involved when HIV/AIDS treatment guidelines are reviewed in terms of organisation (healthcare facility), qualification, experience and work title.

Organisation (Healthcare facility)	Work title	Qualification	Experience

1.3.5 Describe the process of adoption of the latest HIV/AIDS treatment guidelines

_____

_____

_____

_____

1.3.6 List the stakeholders who participated in the adoption meeting of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

1.3.7 How often are the HIV/AIDS treatment guidelines of Lesotho published?

Publication	**Please mark with an X**
Every year	1
Every second year	2
Every third year	3
Each time there is a need (on request)	4

1.4 IMPLEMENTATION PROCESSES FOR THE HIV/AIDS TREATMENT GUIDELINES

1.4.1 In the adoption and dissemination of the latest HIV/AIDS treatment guidelines, was there an implementation plan?

Response	**Please mark with an X**
Yes	1
No	0

If no, go to question 1.4.5

1.4.1.1 If **yes**, describe the implementation plan for the latest HIV/AIDS treatment guidelines

_____

_____

_____

1.4.2 Which level of healthcare is the area of focus for the implementation of the latest HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities?

Focus area	**Please mark with an X**
Hospitals	1
District health management team	2
PHC clinic	3
Community health	4
Other, please specify.	5

1.4.3 Was there any training of the staff members from the area of focus on the implementation of the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.4.3.1 If **yes**, which topics were covered in the training when the latest HIV/AIDS treatment guidelines were implemented?

_____

_____

_____

_____

_____

1.4.3.2 If **no**, how are the health facilities staff informed about the changes in the latest HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.4.4 Is there operational research planned to go hand in hand with the implementation of the latest HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

Section 1.4.4.1 to 1.4.5.2 is for the HIV/AIDS programme manager only

1.4.4.1 If **no,** describe how do you measure success or failure of the implementation of the HIV/AIDS treatment guidelines?

_____

_____

_____

_____

_____

1.4.4.2 If **yes**, how often is the operational research carried out?

_____

_____

1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.4.5 At the DHMT level, is there a staff member in each district who is assigned the responsibility of the implementation of HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.4.5.1 If **no**, is the implementation of latest HIV/AIDS treatment guidelines regarded as part of the routine workload of assigned staff member at the DHMT?

Response	**Please mark with an X**
Yes	1
No	0

1.4.5.2 If **no**, please state what happens to their routine workload at the DHMT when the staff member has to spend more time with the implementation of HIV/AIDS treatment guideline?

_____

_____

_____

1.4.6 In your opinion, which aspects of the previous HIV/AIDS treatment guidelines were fully implemented?

_____

_____

_____

1.5 PERFORMANCE EVALUATION

For HIV/AIDS programme manager only (1.5)

1.5.1 When implementing the latest HIV/AIDS treatment guidelines, do you have task agreements for performance monitoring with DHMT and /or HIV/AIDS programme personnel responsible for implementing these at district level?

Response	**Please mark with an X**
Yes	1
No	0

1.5.1.1 If **yes**, how do you carry out performance evaluation of personnel involved with the implementation of the latest HIV/AIDS treatment guidelines?

_____
_____
_____
_____
_____

1.5.1.2 If **no**, how do you assess performance of the DHMT and / or HIV/AIDS program member responsible for the implementation of the latest HIV/AIDS treatment guidelines?

_____
_____
_____
_____
_____

1.6 HEALTH INFORMATION AND REPORTING

1.6.1 Is the health information reporting system in all MOH and CHAL facilities paper or computer-based?

Report type	**Please mark with an X**
Paper-based	1
Computer-based	2
Both	3

1.6.2 Do you receive reports about HIV/AIDS treatment from PHC facilities (both OPD and ART clinics) through DHMT?

Response	**Yes**	**No**
From OPD	1	0
From ART clinics	1	0

1.6.2.1 Please describe what is entailed in the HIV/AIDS treatment report from the PHC facilities (both OPD and ART clinics) received by HIV/AIDS Programme?

_____

_____

_____

_____

_____

1.6.3 What type of data are included in the reports from PHC facilities? Mark all relevant answers

Type of data	**Yes**	**No**
Number of people tested for HIV	1	0
Number of patients on ARV treatment by gender	1	0
Number of patients on ARV treatment by age category	1	0
Number of pregnant women tested	1	0
Number of pregnant women enrolled into care	1	0
Type of ARV regimens used	1	0
Number of rape cases	1	0
Number of cases for accidental needle pricks	1	0
Number of cases given pre-exposure prophylaxis	1	0
Number of laboratory tests done	1	0
Reported adverse drug reactions	1	0
Reported toxicities	1	0
Reported stock-outs	1	0
Other, please specify	1	0

1.6.4 Describe how the reports are submitted to the office of the HIV/AIDS programme?

Response	Please mark with an X
Reports are sent by PHC facilities as hard copies	1
Reports are sent by PHC facilities as electronic copies	2
Reports are sent through DHMT as hard copies	3
Reports are sent through DHMT as electronic copies	4
Other, please specify_____	5

1.6.5 Who is allowed to collect and capture data at the PHC facility in order to get quality data for use by the HIV/AIDS programme?

Who collects data?	Yes	No
Data clerk	1	0
Nurse	1	0
Cleaner	1	0
Gardener	1	0
Volunteers	1	0
Other, please specify.	1	0

1.6.6 Who manages the health information reporting regarding HIV/AIDS treatment at PHC level?

_____

_____

_____

1.6.7 How does the HIV/AIDS programme use the HIV/AIDS treatment reports from PHC facilities?

_____

_____

_____

_____

1.7 LEADERSHIP AND MANAGEMENT

1.7.1 Do you supervise the DHMT on the implementation of the HIVAIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.7.1.1 If **yes**, describe DHMT supervision on the implementation of the HIVAIDS treatment guidelines you provide as a member of the HIV/AIDS programme

_____

_____

_____

_____

_____

1.7.1.2 What is the supervision interval?

Response in months	Yes	No
Less than 1 month	1	0
1 - 2 months	1	0
3 - 4 months	1	0
5 - 6 months	1	0
More than 6 months	1	0

1.7.2 Do you provide feedback after every supervisory visit?

Response	Please mark with an X
Yes	1
No	0

1.7.2.1 If **yes**, describe how you provide feedback to the DHMT after every supervisory visit**.**

_____

_____

_____

_____

1.7.3 Describe how you usually resolve conflict situations or challenges related to the implementation of the HIV/AIDS treatment guidelines with DHMT?

_____

_____

_____

_____

1.7.3.1 If you're usual method of conflict resolution fails, what do you do?

_____

_____

_____

_____

_____

1.7.3.2 How do you maintain working relationships after a resolved conflict caused by the implementation of treatment guidelines?

_____

_____

_____

1.7.3.3 How do you maintain working relationships after an unsolved conflict caused by the implementation of treatment guidelines?

_____

_____

_____

_____

1.7.4 Do you motivate DHMT staff to do their duties when implementing treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.7.4.1 **If not, why not**?

_____

_____

_____

_____

1.7.4.2 If **yes**, describe how you motivate DHMT staff at different districts with regard of the HIV/AIDS treatment guidelines implementation?

_____

_____

_____

_____

1.7.5 Do you reward good performance regarding the implementation of the HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.7.5.1 If **no**, why not?

_____

_____

_____

1.7.5.2 If **yes**, describe how you reward good performance of DHMT staff in different districts with regard to the implementation of the HIV/AIDS treatment guidelines.

_____

_____

_____

_____

1.7.5.3 Describe how you handle poor performance regarding the implementation of the HIV/AIDS treatment guidelines.

_____

_____

_____

_____

_____

1.8 Factors that influence implementation

1.8.1 According to your perspective i**ndicate whether you agree or disagree that the following factors are barriers** to the implementation of HIV/AIDS treatment guidelines in Lesotho?

Answer the following questions according to your level of agreement with the statement below. Mark with an X.

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.8.1.1 Personnel factors					
Lack of nurses and medical practitioners in hospitals of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in hospitals of CHAL	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of MOH	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of MOHs	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of CHAL	1	2	3	4	5
Lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Reluctance of by healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Fear of change to daily responsibilities	1	2	3	4	5
1.8.1.2 Knowledge and competency factors of healthcare professions					
Insufficient education and training	1	2	3	4	5

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Insufficient clinical knowledge and skills	1	2	3	4	5
Inadequate communication skills	1	2	3	4	5
Poor time management	1	2	3	4	5
Insufficient organisational skills	1	2	3	4	5
Insufficient management skills	1	2	3	4	5
Unaccustomed to document outcomes of HIV/AIDS treatment guidelines	1	2	3	4	5
1.8.1.3 Resource-related factors					
Lack of integrated health information systems for storing and retrieving of data	**1**	**2**	**3**	**4**	**5**
Lack of time	**1**	**2**	**3**	**4**	**5**
Lack of technology (e.g. computers)	**1**	**2**	**3**	**4**	**5**
No or unreliable internet access	**1**	**2**	**3**	**4**	**5**
No or unreliable email services	**1**	**2**	**3**	**4**	**5**
Lack of funds to acquire high technological health information systems	**1**	**2**	**3**	**4**	**5**
Lack of drug information systems	**1**	**2**	**3**	**4**	**5**
Lack of relevant and current reference books	**1**	**2**	**3**	**4**	**5**
Lack of support by non-government organisations.	**1**	**2**	**3**	**4**	**5**
Lack of well-designed implementation research[1] to support decisions	1	2	3	4	5

[1] Peters *et al*. (2013:347) describe implementation research as the scientific inquiry into questions concerning implementation, or the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions). Implementation research indicates how to introduce potential solutions into a health system or how to promote their large scale use and sustainability..

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.8.1.4 Financial factors					
Lack of budget for new HIV/AIDS treatment guidelines implementation	1	2	3	4	5
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	1	2	3	4	5
Lack of budget for new posts for healthcare personnel	1	2	3	4	5
1.8.1.5 System-related factors					
Fragmentation of healthcare system	1	2	3	4	5
Lack of good practice standards	1	2	3	4	5
Lack of task agreements and performance evaluation criteria	1	2	3	4	5
Poor co-ordination of activities by the managers	1	2	3	4	5
Shortage of mentors and role models to encourage health professionals to be innovative	1	2	3	4	5
Management-related problems	1	2	3	4	5
Lack of suitable drugs (ARV regimens included) in the country	1	2	3	4	5
Lack of skills in medicine chain supply management	1	2	3	4	5

Thank you for your time. Your participation is greatly appreciated and will greatly benefit to the success of the research project.

ANNEXURE B: DISTRICT HEALTH MANAGEMENT TEAMS (DHMT) QUESTIONNAIRE

HREC Stamp

QUESTIONNAIRE: DISTRICT HEALTH MANAGEMENT TEAMS (DHMT) (DISTRICT HEALTH MANAGERS, NURSES AND PHARMACISTS)

FACE-TO-FACE INTERVIEW

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

Research entity: Medicine Usage in South Africa
Faculty of Health Sciences
North-West University (Potchefstroom Campus)

Ethics Number: NWU- NWU-00136-17-S1

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

QUESTIONNAIRE: DISTRICT HEALTH MANAGEMENT TEAMS (DHMT) (DISTRICT HEALTH MANAGERS, NURSES AND PHARMACISTS)

Questionnaire number				

Please mark your answers with a cross in the appropriate block.
Note that more than one option may be selected in certain questions.

1.1 DEMOGRAPHIC AND EMPLOYMENT INFORMATION

1.1 Demographic and employment information

1.1.1 Indicate your current position at the DHMT

Position	Please mark one with an X
District health manager	1
Public health nurse	2
District nursing officer	3
Other nursing cadres	4
District Pharmacist	5
Other specify	6

1.1.2 How many years of experience do you have in any of the areas of employment below? *(Answer -0 means you never worked in the area)*

Area of work	Number of years
i) In the Ministry of Health – Lesotho	
ii) In the Christian Health Association of Lesotho	
iii) Private health facility	
iv) In your current position	
v) Other, please specify	

1.1.3 What is your current age? _____ (years)

1.1.4 What is your gender?

Gender	**Please mark one with an X**
Male	1
Female	2

1.1.5 What is the highest level of education that you have completed?

Highest level of education	**Please mark with an X**
i) Primary phase	
ii) Secondary phase	
iii) High school phase	
iv) Diploma at a college	
v) Bachelor's degree	
vi) Master's degree	
vii) Professional degree e.g. nursing	
viii) PhD	
ix) Other, please specify	

1.2 HUMAN RESOURCES IN THE DHMT

Should be completed by DHMT managers only. If you are not a DHMT manager go to 1.2.3)

1.2.1 List all the positions of the health professionals working in the DHMT

_____

_____

_____

_____

1.2.2 Are all the positions currently filled in the DHMT?

Response	Please mark with an X
Yes	1
No	0

1.2.2.1 If **no**, which positions are not filled?

_____

_____

1.2.2.2 What are the reasons for not filling the vacant post?

Reason for not filling the positions	Yes	No
Budget problems	1	0
Lack of a successful candidate	1	0
Position is not yet advertised.	1	0
Ministry of Health decided not the fill the post	1	0
Other, please specify.	1	0

1.2.2.3 Who carries out the duties attached to the vacant post?

_____

_____

_____

1.2.3 Did you have any role to play when the most recent (latest) treatment guidelines were implemented?

Response	Please mark with an X
Yes	1
No	0

If no, go to question 1.3

1.2.3.1 If **yes**, did you receive any training specific to the implementation of the treatment guidelines in the HIV/AIDS programme?

Response	**Please mark with an X**
Yes	1
No	0

If no, go to question 1.3

1.2.3.2 If **yes**, who provided the training?

_____

_____

_____

1.2.3.3 What was the duration of training?

Duration of the training	**Please mark with an X**
i) Less than one week	1
ii) One week	2
iii) Two weeks	3
iv) Four weeks	4
v) More than a month	5

1.2.3.4 Mark the different topics covered in the training?

Response	**Please mark all that apply with an X**
i) Overview of the HIV/AIDS treatment guidelines.	
ii) Comparison between the previous and the new HIV/AIDS treatment guidelines.	
iii) New changes in the new HIV/AIDS treatment guidelines.	
iv) New logistical requirements (a drug with low temperature storage) in the new HIV/AIDS treatment guidelines.	
v) New clinical management requirements (e.g. regimen changes, laboratory test, and monitoring aspects) in the new HIV/AIDS treatment guidelines).	
vi) New staff requirements (e.g. laboratory personnel who know how to operate new test machines).	

Response	Please mark all that apply with an X
vii) Importance of adherence to current treatment guidelines	
viii) Implementation plan of HIV/AIDS treatment guidelines	
ix) Other, please specify	

1.2.3.5 Evaluation and certification of the training on HIV/AIDS treatment guidelines implementation

Evaluation and certification	Yes	No
i) Were you given an evaluation form to complete after the training?	1	0
ii) Was certification provided to you after the training?	1	0
iii) Was only a proof of attendance provided to you after the training?	1	0

1.2.3.6 Were the personnel trained to train others with regard to the most recent (latest) HIV/AIDS treatment guidelines implementation?

Response	Please mark with an X
Yes	1
No	0

1.2.3.7 If **yes**, was there any training before review of the most recent (latest) HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.2.3.8 If **not**, what was the reason for not providing training before the review of the new HIV/AIDS treatment guidelines?

_____

_____

_____

_____

_____

1.3 HIV/AIDS TREATMENT GUIDELINES

1.3.1 Were you involved in the last review of the HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

If no, go to question 1.4

1.3.1.1 If yes, list the sources of information that were used when you reviewed the HIV/AIDS treatment guidelines?

_____

_____

_____

1.3.2 What was your specific role in the review and adoption of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.3.3 Were you satisfied with the input you provided?

Response	Please mark with an X
Yes	1
No	0

1.3.3.1 If **no**, state why you were not satisfied?

_____

_____

_____

1.3.4 State the edition and year of publication of the latest HIV/AIDS treatment guidelines the facility has.

_____

1.4 IMPLEMENTATION PROCESSES FOR THE HIV/AIDS TREATMENT GUIDELINES

1.4.1 Do you have an implementation plan for the latest (most recent) HIV/AIDS treatment guidelines from the HIV/AIDS programme?

Response	Please mark with an X
Yes	1
No	0

If not, go to question 1.5

1.4.1.1 If **yes**, did you have a role to play in the implementation of the latest HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.4.1.2 If **yes**, describe the role you played in the implementation of the latest (most recent) HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.4.2 Which healthcare facilities are the areas of focus for implementation of the latest (most recent) HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities? (Mark more than one if applicable)

Focus area	Please mark with an X
Hospitals	1
DHMT	2
PHC clinic	3

Community health	4
Other, please specify	5

1.4.3 Was there any training for the staff members of the area of focus for the implementation of the latest (most recent) HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.4.3.1 If **yes**, describe how the training was carried out.

_____

_____

_____

1.4.3.2 If **no**, how were health professionals informed about the changes in the latest HIV/AIDS treatment guidelines?

_____

_____

_____

1.4.4 Was there implementation research[2] planned to go hand-in-hand with the implementation of the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.4.4.1 If **no**, describe how you have measure success or failure regarding the implementation of the HIV/AIDS treatment guidelines**?**

[2] Peters *et al*. (2013:347) describe implementation research as the scientific inquiry into questions concerning implementation, or the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions). Implementation research indicates how to introduce potential solutions into a health system or how to promote their large scale use and sustainability.

1.4.4.2 If **yes**, how often was operational research carried out?

_____

_____

1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.4.5 How are the reports submitted to DHMT?

Response	**Please mark with an X**
Reports are sent by PHC facilities as hard copies.	1
Reports are sent by PHC facilities as electronic copies.	2
Reports are sent through DHMT to HIV/AIDS programme as hard copies.	3
Reports are sent through DHMT to HIV/AIDS programme as electronic copies.	4
Other, please specify _____	5

1.4.6 Who is allowed to collect and capture data at the PHC facility?

_____

_____

1.4.7 Who is supposed to provide daily supervision on data quality and management, and HIV treatment reporting at PHC level?

_____

_____

1.4.8 What do you do with HIV/AIDS treatment reports from PHC?

_____

_____

_____

1.5 PERFORMANCE EVALUATION

1.5.1 In your supervisory capacity at the PHC, do you have a task agreement with PHC managers for their performance with regard to the implementation of HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

1.5.1.1 If yes, how do you carry out performance evaluation of PHC managers on the implementation of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.5.1.2 If not, how do you assess performance of PHC managers with regard to the implementation of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.6 Health information and reporting

1.6.1 Is the health information reporting system in all MOH and CHAL facilities paper or computer based?

Report type	Please mark with an X
Paper based	1
Computer based	2
Both	3

1.6.2 Do you receive reports about HIV/AIDS treatment from PHC (both OPD and ART clinics) facilities?

Response	Yes	No
From OPD	1	0
From ART clinics	1	0

1.6.3 What type of data are included in the reports from PHC facilities? Mark all relevant answers

Type of data	Yes	No
Number of people tested for HIV	1	0
Number of patients on ARV treatment by gender	1	0
Number of patients on ARV treatment by age category	1	0
Number of pregnant women tested	1	0
Number of pregnant women enrolled into care	1	0
Number of rape cases	1	0
Number of cases for accidental needle pricks	1	0
Number of cases given pre-exposure prophylaxis	1	0
Number of laboratory tests done	1	0
Type of ARV regimens used	1	0
Reported adverse drug reactions	1	0
Reported toxicities	1	0

Type of data	Yes	No
Reported stock-outs	1	0
Other, please specify	1	0

1.6.4 Indicate how the reports are submitted to the office of the HIV/AIDS programme?

Response	Please mark with an X
Reports are sent by PHC facilities as hard copies	1
Reports are sent by PHC facilities as electronic copies	2
Reports are sent through DHMT as hard copies	3
Reports are sent through DHMT as electronic copies	4
Other, please specify_____	5

1.6.5 Who is allowed to collect and capture data at the PHC facility in order to get quality data for use by the HIV/AIDS programme?

Who collects data?	Yes	No
Data clerk	1	0
Nurse	1	0
Cleaner	1	0
Gardener	1	0
Volunteers	1	0
Other, please specify.	1	0

1.6.6 Who is supposed to provide daily supervision on health information data quality and management, and HIV treatment reporting at PHC level?

_____

_____

1.6.7 How does the DHMT use the HIV/AIDS treatment reports from PHC facilities?

_____

_____

1.7 LEADERSHIP AND MANAGEMENT

1.7.1 Do you supervise PHC facilities on the implementation of the latest HIVAIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.7.1.1 If **yes**, describe the supervision of PHC level on the implementation of the latest (most recent) HIVAIDS treatment guidelines you provide.

_____

_____

_____

_____

_____

1.7.1.2 How often is the supervision carried out?

Response	**Please mark with an X**
Less than one month	1
1 - 3 months	2
3 - 4 months	3
5 - 6 months	4
More than 6 months	5
Other, please specify	6

1.7.1.3 Do your provide feedback to PHC staff after every supervisory visit?

Response	**Please mark with an X**
Yes	1
No	0

1.7.1.4 If **not**, why not?

_____

_____

_____

1.7.1.5 If **yes**, describe how you provide feedback to the all relevant staff members after every supervisory visit.

_____

_____

1.7.2 Describe how you usually resolve conflict situations or challenges related to the implementation of the HIV/AIDS treatment guidelines with PHC staff?

_____

_____

_____

1.7.2.1 If your usual method of conflict resolution fails, what do you do?

_____

_____

1.7.2.2 How do you maintain working relations after a resolved conflict among staff members?

_____

_____

1.7.2.3 How do you maintain working relations after an unsolved conflict among staff members?

_____

_____

1.7.3 Describe how you motivate PHC staff at your district regarding the implementation of f HIV/AIDS treatment guidelines?

_____
_____
_____
_____

1.7.4 Describe how you reward good performance of PHC staff at your district regarding the implementation of f HIV/AIDS treatment guidelines?

_____
_____
_____
_____
_____
_____

1.7.4.1 Describe how you handle poor performance in the implementation of HIV/AIDS treatment guidelines in the PHC facilities at your district.

_____
_____
_____
_____
_____
_____

1.8 Factors that influence implementation

1.8.1 According to your perspective i**ndicate whether you agree or disagree that the following factors are BARRIERS** to the implementation of HIV/AIDS treatment guidelines in Lesotho?

Answer the following questions according to your level of agreement with the statement below. Mark with an X.

Barriers	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1.8.1.1 Personnel factors					
Lack of nurses and medical practitioners in hospitals of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in hospitals of CHAL	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of MOH	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of MOHs	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of CHAL	1	2	3	4	5
Lack of shared planning on DHMT level regarding the implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Reluctance of by healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Fear of change to daily responsibilities	1	2	3	4	5
1.8.1.2 Knowledge and competency factors of healthcare professions					
Insufficient education and training	1	2	3	4	5

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Insufficient clinical knowledge and skills	1	2	3	4	5
Inadequate communication skills	1	2	3	4	5
Poor time management	1	2	3	4	5
Insufficient organisational skills	1	2	3	4	5
Insufficient management skills	1	2	3	4	5
Unaccustomed to document outcomes of HIV/AIDS treatment guidelines	1	2	3	4	5
1.8.1.3 Resource-related factors					
Lack of integrated health information systems for storing and retrieving of data	**1**	**2**	**3**	**4**	**5**
Lack of time	**1**	**2**	**3**	**4**	**5**
Lack of technology (e.g. computers)	**1**	**2**	**3**	**4**	**5**
No or unreliable internet access	**1**	**2**	**3**	**4**	**5**
No or unreliable email services	**1**	**2**	**3**	**4**	**5**
Lack of funds to acquire high technological health information systems	**1**	**2**	**3**	**4**	**5**
Lack of drug information systems	**1**	**2**	**3**	**4**	**5**
Lack of relevant and current reference books	**1**	**2**	**3**	**4**	**5**
Lack of support by non-government organisations.	**1**	**2**	**3**	**4**	**5**
Lack of well-designed operational research to support decisions	1	2	3	4	5
1.8.1.4 Financial factors					
Lack of budget for new HIV/AIDS treatment guidelines implementation	1	2	3	4	5

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	1	2	3	4	5
Lack of budget for new posts for healthcare personnel	1	2	3	4	5
1.8.1.5 System-related factors					
Fragmentation of healthcare system	1	2	3	4	5
Lack of good practice standards	1	2	3	4	5
Lack of task agreements and performance evaluation criteria	1	2	3	4	5
Poor co-ordination of activities by the managers	1	2	3	4	5
Shortage of mentors and role models to encourage health professionals to be innovative	1	2	3	4	5
Management-related problems	1	2	3	4	5
Lack of suitable drugs (ARV regimens included) in the country	1	2	3	4	5
Lack of skills in medicine chain supply management	1	2	3	4	5

Thank you for your time. Your participation is greatly appreciated and will greatly benefit to the success of the research project.

ANNEXURE C PRIMARY HEALTH CARE MANAGERS' AND HEALTH PRACTITIONERS' (OPD AND ART CLINIC) QUESTIONNAIRE

NORTH-WEST UNIVERSITY ®
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

HREC Stamp

QUESTIONNAIRE: PRIMARY HEALTH CARE MANAGERS' AND HEALTH PRACTITIONERS' QUESTIONNAIRE (OPD AND ART CLINIC)

SELF-ADMINISTERED QUESTIONNAIRE

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

Research entity: Medicine Usage in South Africa

Faculty of Health Sciences
North-West University (Potchefstroom Campus)

Ethics Number: NWU- NWU-00136-17-S1

EVALUATION OF FACTORS AFFECTING THE IMPLEMENTATION OF HIV/AIDS TREATMENT GUIDELINES IN LESOTHO

Questionnaire: Primary Health Care Managers and Health Practitioners' Questionnaire (OPD and ART Clinics)

Questionnaire number				

Please mark your answers with a cross in the appropriate block.
Note that more than one option may be selected in certain questions.

Please note: PHC facility can either be an OPD or ART clinic

1.1 DEMOGRAPHIC AND EMPLOYMENT INFORMATION

Section 1.1 should be completed by all PHC managers and health practitioners

1.1.1 Please state the facility you work for.

Facility	**Please mark one with an X**
ART clinic	1
OPD	2
Other, please specify	3

1.1.2 Indicate your current position at the PHC facility.

_____

1.1.3 How many years of experience do you have in any of the areas of employment below? (0 – when you have not worked at the place).

Area of work	**Number of years**
i) In the Ministry of Health – Lesotho	
ii) In the Christian Health Association of Lesotho	
iii) Private health facility	

1.1.4 What is your current age?

_____ (years)

1.1.5 What is your gender?

Gender	**Please mark one with an X**
Male	1
Female	2

1.1.6 What is the highest level of education that you have completed?

Highest level of education	**Please mark one with an X**
Primary phase	1
Secondary phase	2
High school phase	3
Diploma at a college	4
Bachelor's degree	5
Master's degree	6
Professional degree e.g. nursing	7
PhD	8
Other, please specify	9

1.2 STAFFING AND LEADERSHIP OF PHC

Should be completed by the PHC managers only

1.2.1 How many health professional positions does the health facility have?

_____

1.2.2 Mention all the health professional positions the PHC facility has?

Health professional	**Please mark one with an X**
Medical practitioner	1
Nurse manager	2
Nurse	3
Pharmacist	4
Other specify	5

1.2.3 Are all the positions filled?

Response	**Please mark with an X**
Yes	1
No	0

1.2.3.1 If **no**, which positions are not filled?

_____

_____

_____

1.2.3.2 Who carries out the duties that do not have relevant personnel?

_____

_____

1.2.4 Are care and treatment of HIV/AIDS according to the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

If no, go to question 1.3

1.2.4.1 If **yes**, who consults HIV/AIDS patients at the PHC facility?

Profession	**Please mark with an X**
i) Medical practitioner	
ii) Nurse	
iii) Other, please specify	

1.2.4.2 Who is responsible for ARV dispensing?

Profession	**Please mark with an X**
i) Pharmacist	
ii) Pharmacy technician	
iii) Nurse	
iv) Other, please specify	

1.2.4.3 Who is responsible for drug supply of ARVs if there is no pharmacist in the PHC facility?

Profession	**Please mark with an X**
i) Pharmacy technician	
ii) Nurse	
iii) Other, please specify	

1.2.5 Are the PHC healthcare practitioners trained on how to implement new changes in the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

If **no**, go to section1.3

1.2.5.1 If **yes**, who provided the training?

Response	**Please mark with an X**
i) HIV/AIDS programme	
ii) World Health Organization	
iii) Other development partners such as Partners in Health (PIH)	
iv) Consultant	
v) Training institution	
vi) Other, please specify	

1.2.5.2 What was the duration of training?

Duration of the training	**Please mark with an X**
i) Less than one week	1
ii) One week	2
iii) Two weeks	3
iv) Four weeks	4
v) More than a month	5
vi) Other, please specify	6

1.2.5.3 Which topics were covered in the training?

_____

_____

_____

_____

1.2.5.4 Evaluation and certification

Evaluation and certification	Yes	No
i) Were you given an evaluation form to complete after the training?	1	0
ii) Was certification provided to you after the training?	1	0
iii) Was only a proof of attendance provided to you after the training?	1	0

1.2.5.5 Was the personnel trained to train others?

Response	Please mark with an X
Yes	1
No	0

1.3 HIV/AIDS TREATMENT GUIDELINES

Should be completed by the PHC managers only

1.3.1 What is the responsibility of the PHC manager regarding the latest HIV/AIDS treatment guidelines implementation?

Responsibility	Please mark with an X
i) Distribution of copies of the latest HIV/AIDS treatment guidelines to staff.	
ii) Teaching PHC staff about changes in the latest HIV/AIDS treatment guidelines.	
iii) Ensuring use of the latest HIV/AIDS treatment guidelines.	
iv) Other, please specify	

1.3.2 Which sources of information are available at the PHC facility to guide prescribing?

Source	Please mark with an X
i) Local HIV/AIDS treatment guidelines	
ii) Formulary	
iii) Other text books	
iv) Electronic text books	
v) Other, please specify	

1.3.3 Were you invited for the review and adoption of the latest HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

If no, go to question 1.3.9

1.3.3.1 If **yes**, what was your specific role in the review and adoption of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

_____

1.3.4 State the edition and year of publication of the latest HIV/AIDS treatment guidelines used in your facility.

1.4 IMPLEMENTATION PROCESSES FOR THE HIV/AIDS TREATMENT GUIDELINES

Should be completed by the PHC managers only

1.4.1 Did you receive the implementation plan for the latest HIV/AIDS treatment guidelines from the HIV/AIDS programme?

Response	Please mark with an X
Yes	1
No	0

If no, go to section 1.5

1.4.1.1 If **yes**, did you play a role in the implementation of the latest HIV/AIDS treatment guidelines?

Response	Please mark with an X
Yes	1
No	0

If no, go to section 1.5

1.4.1.2 If **yes,** describe the role you played in the implementation of the latest HIV/AIDS treatment guidelines?

_____

_____

_____

1.**4.2 Was there any training for the staff members in the PHC facilities for the implementation of the latest HIV/AIDS treatment guidelines?**

Response	**Please mark with an X**
Yes	1
No	0

1.4.2.1 If **yes**, describe how the training is carried out.

_____

_____

_____

1.4.2.2 If **no**, how are the health professionals informed about the changes in the latest HIV/AIDS treatment guidelines?

_____

_____

_____

1.4.3 Were the previous HIV/AIDS treatment guidelines fully implemented?

Response	**Please mark with an X**
Yes	1
No	0

1.4.3.1 If **yes**, which aspects of the previous HIV/AIDS treatment guidelines were fully implemented? Indicate more than one if necessary.

_____

_____

_____

_____

1.5 PERFORMANCE EVALUATION

Should be completed by the PHC managers only

1.5.1 In your supervisory capacity at the PHC, do you have task agreements with PHC health practitioners for their performance with regard to care and treatment of HIV/AIDS patients using the latest HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.5.1.1 If **yes**, how do you carry out the performance evaluation?

_____

_____

1.6 HEALTH INFORMATION AND REPORTING

Should be completed by the PHC managers only

1.6.1 What report type is used for health information reporting in your PHC facility?

Report type	**Please mark with an X**
i) Paper-based	
ii) Computer-based	
iii) Both	

1.6.2 Do you produce reports about HIV/AIDS care and treatment at PHC (OPD and ART clinic) facilities?

Response	**Please mark with an X**
Yes	1
No	0

If not go to section 1.7

1.6.2.1 If **yes**, what type of data are included in the reports from PHC facilities? Mark all relevant answers

Type of data	**Yes**	**No**
i) Number of people tested for HIV	1	0
ii) Number of patients on ARV treatment by gender	1	0
iii) Number of patients on ARV treatment by age category	1	0
iv) Number of pregnant women tested	1	0
v) Number of pregnant women enrolled into care	1	0
vi) Number of rape cases	1	0
vii) Number of cases for accidental needle pricks	1	0
viii) Number of cases given pre-exposure prophylaxis	1	0
ix) ARV regimens used	1	0
x) Reported stock-outs	1	0
xi) Number of laboratory tests done	1	0
xii) Reported adverse drug reactions	1	0
xiii) Reported toxicities	1	0
xiv) Other, specify	1	0

1.6.3 Indicate how the reports are submitted to HIV/AIDS programme?

Response	**Please mark with an X**
i) Reports are sent by PHC facilities as hard copies	
ii) Reports are sent by PHC facilities as electronic copies	
iii) Reports are sent through DHMT to HIV/AIDS programme as hard copies	
iv) Reports are sent through DHMT to HIV/AIDS programme as electronic copies	

v) Other, please specify _____	

1.6.4 In your opinion, are any of the following personnel allowed to collect and capture data at the PHC facility?

Who collects data	**Yes**	**No**
i) Data clerk	1	0
ii) Nurse	1	0
iii) Cleaner	1	0
iv) Gardener	1	0
v) Volunteers	1	0
vi) Other, please specify	1	0

1.6.5 Who is supposed to provide daily supervision on data quality and management, and HIV treatment reporting at PHC level?

_____

_____

_____

_____

_____

1.6.6 What happens to the HIV/AIDS treatment reports from PHC facilities?

_____

_____

_____

_____

_____

1.7 LEADERSHIP AND MANAGEMENT

Should be completed by the PHC managers only

1.7.1 Do you supervise PHC staff on the care and treatment of HIV/AIDS patients?

Response	**Please mark with an X**
Yes	1
No	2

If no, go to section 1.8

1.7.1.1 If yes, describe how you supervise of PHC staff on the care and treatment of HIV/AIDS patients you provide.

_____

_____

_____

_____

1.7.1.2 How often is the supervision carried out per PHC practitioner?

Response	**Yes**	**No**
i) Less than one month	1	0
ii) 1 – 2 months	1	0
iii) 3 - 4 months	1	0
iv) 5 - 6 months	1	0
v) More than 6 months	1	0

1.7.1.3 Do your provide feedback to the PHC practitioner after every supervision?

Response	**Please mark with an X**
Yes	1
No	0

1.7.2 Describe how you usually resolve conflict situations or challenges related to the implementation of HIV/AIDS care and treatment with PHC staff?

_____

_____

_____

_____

1.7.2.1 If you're usual method of conflict resolution fails what do you do?

_____

_____

_____

_____

1.7.2.2 How do you maintain working relations after a resolved conflict among staff members?

_____

_____

_____

_____

1.7.3 Do you motivate PHC staff to do their duties in the implementation of HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.7.3.1 If not, why not?

_____

_____

_____

1.7.3.2 If yes, describe how you motivate PHC staff in your PHC facility regarding the implementation of HIV/AIDS treatment guidelines?

_____

_____

_____

1.7.4 Do you reward good performance regarding the implementation of HIV/AIDS treatment guidelines?

Response	**Please mark with an X**
Yes	1
No	0

1.7.4.1 If not, why not?

_____

_____

_____

_____

1.7.4.2 If **yes,** describe how you reward good performance of PHC practitioners in your PHC facility regarding implementation of HIV/AIDS treatment guidelines.

_____

_____

_____

_____

1.7.4.3 Describe how you handle poor performance in the implementation of HIV/AIDS treatment guidelines.

_____

_____

_____

_____

1.8 Factors that influence implementation

Should be completed by the PHC managers only

1.8.1 According to your perspective i**ndicate whether you agree or disagree that the following factors are barriers** to the implementation of HIV/AIDS treatment guidelines in Lesotho?

Answer the following questions according to your level of agreement with the statement below. Mark with an X.

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1.8.1.1 Personnel factors					
Lack of nurses and medical practitioners in hospitals of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in hospitals of CHAL	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of MOH	1	2	3	4	5
Lack of nurses and medical practitioners in PHC clinics of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of MOH	1	2	3	4	5
Lack of pharmacy personnel at the hospitals of CHAL	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of MOHs	1	2	3	4	5
Lack of pharmacy personnel at the PHC clinics of CHAL	1	2	3	4	5
Lack of shared planning on HIV/AIDS programme level for the implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Reluctance of by healthcare professions to assume responsibility for the successful implementation of new HIV/AIDS treatment guidelines	1	2	3	4	5
Fear of change to daily responsibilities	1	2	3	4	5
1.8.1.2 Knowledge and competency factors of healthcare professions					
Insufficient education and training	1	2	3	4	5
Insufficient clinical knowledge and skills	1	2	3	4	5
Inadequate communication skills	1	2	3	4	5
Poor time management	1	2	3	4	5

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Insufficient organisational skills	1	2	3	4	5
Insufficient management skills	1	2	3	4	5
Unaccustomed to document outcomes of HIV/AIDS treatment guidelines	1	2	3	4	5
1.8.1.3 Resource-related factors					
Lack of integrated health information systems for storing and retrieving of data	1	2	3	4	5
Lack of time	1	2	3	4	5
Lack of technology (e.g. computers)	1	2	3	4	5
No or unreliable internet access	1	2	3	4	5
No or unreliable email services	1	2	3	4	5
Lack of funds to acquire high technological health information systems	1	2	3	4	5
Lack of drug information systems	1	2	3	4	5
Lack of relevant and current reference books	1	2	3	4	5
Lack of support by non-government organisations.	1	2	3	4	5
Lack of well-designed implementation research[3] to support decisions	1	2	3	4	5
1.8.1.4 Financial factors					

[3] Peters *et al*. (2013:347) describe implementation research as the scientific inquiry into questions concerning implementation, or the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions). Implementation research indicates how to introduce potential solutions into a health system or how to promote their large scale use and sustainability.

Barriers	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Lack of budget for new HIV/AIDS treatment guidelines implementation	1	2	3	4	5
Lack of budget for training of personnel on new HIV/AIDS treatment guidelines implementation	1	2	3	4	5
Lack of budget for new posts for healthcare personnel	1	2	3	4	5
1.8.1.5 System-related factors					
Fragmentation of healthcare system	1	2	3	4	5
Lack of good practice standards	1	2	3	4	5
Lack of task agreements and performance evaluation criteria	1	2	3	4	5
Poor co-ordination of activities by the managers	1	2	3	4	5
Shortage of mentors and role models to encourage health professionals to be innovative	1	2	3	4	5
Management-related problems	1	2	3	4	5
Lack of suitable drugs (ARV regimens included) in the country	1	2	3	4	5
Lack of skills in medicine chain supply management	1	2	3	4	5

Thank you for your time. Your participation is greatly appreciated and will greatly benefit to the success of the research project.

ANNEXURE D: INFORMED CONSENT FORM LEVEL 1: HIV/AIDS PROGRAMME

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR HIV/AIDS PROGRAMME STAFF WHO WILL HAVE FACE-TO-FACE INTERVIEWS

TITLE OF THE RESEARCH STUDY: Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

ETHICS REFERENCE NUMBER: NWU-00136-17-S1

PRINCIPAL INVESTIGATOR: Professor Martie S. Lubbe

POST-GRADUATE STUDENT (Researcher): Mrs Maseabata V. Ramathebane

ADDRESS: **North-West University (Potchefstroom Campus)**

Potchefstroom

Private Bag X6001

Potchefstroom 2520

CONTACT NUMBER: 018-2992288 (Work) 082 564 6583 (cell)

You are being invited to take part in a **research study** that forms part of my study done in fulfilment of the requirement for the degree PhD in Pharmacy Practice with the title: *Evaluation of factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho.*

Please take some time to read through the information presented here, which will explain the details of this study. Please ask the researcher explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you should be fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to say no and withdraw from participation. If you say no, this will not affect you in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now or just after the interview.

This study has been approved by the Health Research Ethics Committees of the Faculty of Health Sciences of the North-West University (NWU) and the Ministry of Health of Lesotho (MOH) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (South Africa DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records**.**

What is this research study all about?

The general aim of this study is to evaluate the processes and factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.

This study will be conducted at the HIV/AIDS programme of the MOH, in an allocated office. It will involve a face-to-face interview between the researchers and members of the HIV/AIDS programme by using a structured questionnaire. About six healthcare professionals will be included in this study. The study will also involve the District Health Management Team (DHMT) and the primary health care clinics facilities and outpatient departments with an approximate number of 400 healthcare professionals who are all health practitioners.

Why have you been invited to participate?

You have been invited to participate in the study because you are an employee of the HIV/AIDS programme as a health practitioner. Your manager gave permission that the study can take place and allowed all members of the HIV/AIDS programme to be invited to participate and to be interviewed. You also comply with the inclusion criteria because your work includes the implementation of HIV/AIDS treatment guidelines and you are a member of the HIV/AIDS programme. You will be excluded if you are absent from work during the period of data gathering, and could not be followed up during the study period.

What will be expected of you?

If you agree to participate in the study, you will be expected to sign two copies of the informed consent forms and put one copy in a separate box in the secretary's office of the manager of the HIV/AIDS programme. You can keep the other signed copy of the informed consent form. The researcher will make an appointment with you for a face-to-face interview. The interview will take about an hour; there are eight sections in the questionnaire, and about 149 questions in total and some of the questions have a number of pre-formulated answers that you can choose from. There are also a few questions where you can formulate your own answers. You may decline to answer a specific question or withdraw completely from the study. These are the only responsibilities that you will have regarding this study.

Will you gain anything from taking part in this research?

If you participate in the study, you will have the opportunity to share your views regarding the problems that may experience with the implementation of HIV/AIDS treatment guidelines in Lesotho as well as possible solutions to improve the practice situation. The Ministry of Health as well as the members of the HIV/AIDS programme will benefit as no such study has been carried out on the evaluation of the implementation of HIV/AIDS treatment guidelines in Lesotho. This study may inform them regarding the best implementation processes and policies to follow during the implementation of new guidelines, specifically HIV/AIDS treatment guidelines. PHC managers may view HIV/AIDS treatment guidelines as an important source of information and promote its use and value among PHC practitioners. It may also increase their acceptance of the process. HIV/AIDS patients and the society in general may benefit from well implemented HIV/AIDS treatment guidelines which lead to improved health of people living with HIV.

Are there risks involved in you taking part in this research and what will be done to manage the risk?

Risks	Precautions
Filling in the structured questionnaire and participation in the face-to-face interview could cause some emotional distress.	All answers will be kept completely confidential. No names will be reported. You will be reminded during the introductory meeting that you have the right to withdraw at any stage of the interview until the final conclusion of the interview If you feel any signs of stress during the face-to-face interview you can ask to stop the interview. You will be interviewed face-to-face in the privacy of a specific office.
You may be worried that there may be a feedback loop between you and the manager of the HIV/AIDS programme regarding your participation or refusal to participate in the study.	All researchers involved with the project will also sign a confidentiality agreement; therefore, no level of management of the Ministry of Health of Lesotho will be informed about your possible participation or refusal to participate. Your signed informed consent form will be placed in a sealed box. Your colleagues will not know who did participate and who did not participate. There will be no link between you and your informed consent form. You have the right to decline answering a question during the face-to-face interview.
You may feel uncomfortable to answer certain questions.	The researcher will inform you that you have the right to decline answering a specific question or to skip it or to answer it later. Otherwise, you may also withdraw from the survey altogether.

How will we protect your confidentiality and who will see your findings?

Anonymity and confidentiality will be ensured throughout the study: During the interview, the researcher will not document your name, to keep your identity confidential, yet only partial anonymity can be confirmed. You will receive two informed consent forms to sign. You will have to place one copy in a separate sealed box at the secretary's office and you should keep the other copy. The researcher and the promoters will sign a confidentiality agreement. No name or any form of identification of staff will be used. Information will not be shared with any other person or other member of the staff of the Ministry of Health in Lesotho.

What will happen with the findings or samples?

The completed questionnaires will be stored safely in a locked cupboard in the researcher's office. Electronic data will be protected from unauthorized persons by means of a password protected computer of the researcher for the duration of the data-gathering period.

Once the data-capturing process is completed, these documents and electronic data will be kept for the regulatory seven years at the research entity at the North-West University, after

which the documents will be dealt with as per North-West University policy. Data from this study will be used only for this study.

How will you know about the results of this research?

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players including the manager of HIV/AIDS programme, the DHMT managers of all ten districts and the superintendent of each of the 18 hospitals.

A hard copy of the research report will also be made available to the Ministry of Health, Lesotho. The findings of the study will also be published as research articles and also presented at a conference. The study results will be presented to the NWU (Potchefstroom Campus) as a thesis in order to complete the PhD in Pharmacy Practice programme. No direct feedback will be given to individual healthcare professionals.

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

The interview will be carried out at a time and place convenient for you, therefore there will be no cost related to the interview incurred by you.

Is there anything else that you should know or do?

You can contact Prof Martie S Lubbe at 018-2992288 (Work) +27 82-564-6583 (cell) or Maseabata Ramathebane at 00266-58021675 (cell) or mvramathebane@gmail.com or mv.ramathebane@nul.ls if you have any further questions or have any problems.

You can also contact the Health Research Ethics Committee via Mrs Carolien van Zyl at +27 18 299 1206 or carolien.vanzyl@nwu.ac.za if you have any concerns that were not answered about the research or if you have complaints about the research.

You will receive a copy of this information and consent form for your own purposes.

Declaration by healthcare professional

By signing below, I …….…… agree to take part in the research study titled: *Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.*

I declare that:

I have read this information/it was explained to me by a trusted person in a language in which I am fluent and comfortable. The research was clearly explained to me. I have had

a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered. I understand that taking part in this study is **voluntary** and I have not been pressurised to take part. I may choose to leave the study at any time and will not be handled in a negative way if I do so. I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

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

..... **.....**

Signature of healthcare professional Signature of witness

Declaration by person obtaining consent

I (name) ……..……. declare that:

I clearly and in detail explained the information in this document to

……

I did/did not use an interpreter. I encouraged him/her to ask questions and took adequate time to answer them. I am satisfied that he/she adequately understands all aspects of the research, and as discussed above I gave him/her time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of person obtaining consent Signature of witness

Declaration by researcher

I *(name)* ……..……. declare that:

I explained the information in this document to ……..

I did not use an interpreter. I was available should he/she want to ask any further questions. The informed consent was obtained by an independent person. I am satisfied that he/she adequately understands all aspects of the research, as described above. I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of researcher **Signature of witness**

ANNEXURE E: INFORMED CONSENT FORM – LEVEL 2: DHMT

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR DHMT STAFF WHO WILL HAVE FACE-TO-FACE INTERVIEW

TITLE OF THE RESEARCH STUDY: Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

ETHICS REFERENCE NUMBERS: NWU-00136-17-S1

PRINCIPAL INVESTIGATOR: Professor Martie S. Lubbe

POST-GRADUATE STUDENT (researcher): Maseabata V. Ramathebane

ADDRESS: **North-West University (Potchefstroom Campus)**

Potchefstroom

Private Bag X6001

Potchefstroom 2520

CONTACT NUMBER: 018-2992288 (Work) 082 564 6583 (cell)

You are being invited to take part in a **research study** that forms part of my study in fulfilment of the requirements for the PhD in Pharmacy Practice titled: *Evaluation of factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho.*

Please take some time to read through the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to say no to the invitation to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU) and Ministry of Health (MOH) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (South Africa DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records**.**

What is this research study all about?

The general aim of this study is to evaluate the processes and factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.

This study will be conducted in an allocated office at the District Health Management Team (DHMT) offices in the ten districts. It will involve a face-to-face interview using a structured questionnaire with the researcher trained in pharmacy practice research. About 30 healthcare professionals will be included in this study. The study will also involve the District Health Management Team (DHMT) and the primary healthcare facilities and outpatient departments with an approximate number of 400 healthcare professionals who are all health practitioners.

Why have you been invited to participate?

You have been invited to participate in this research because you are an employee of the DHMT as a health practitioner and your manager gave permission for the study to take place and allowed all members of the DHMT to be invited to participate and to be interviewed. You also comply with the inclusion criteria because you are a health practitioner working at DHMT and your work includes the implementation of HIV/AIDS treatment guidelines. You will be excluded if you are absent from work during the period of data gathering, and could not be followed up during the study period.

What will be expected of you?

If you agree to participate, you will be expected to sign two copies of the informed consent form and put one copy in a sealed box in the secretary's office of the manager of the DHMT prior to the interview. You can keep the other signed copy of the informed consent form.
The researcher will make an appointment with you for a face-to-face interview. The interview will take about an hour; there are eight sections in the questionnaire, and about 149 questions in total and most of the questions have a number of pre-formulated answers that you can choose from. There are also a few questions where you can formulate your own answers. You may decline to answer a specific question or withdraw completely from the study. These are the only responsibilities that you will have regarding this study.

Will you gain anything from taking part in this research?

If you participate in the study, you will have the opportunity to share your views regarding the problems that may be experienced with the implementation of HIV/AIDS treatment guidelines in Lesotho as well as possible solutions to improve the practice situation. The Ministry of Health as well as the members of the HIV/AIDS programme will benefit as no such study has been carried out on the evaluation of the implementation of HIV/AIDS treatment guidelines in Lesotho. This study may inform them regarding the best implementation processes and policies to follow during the implementation of new guidelines, specifically HIV/AIDS treatment guidelines. PHC managers may view HIV/AIDS treatment guidelines as an important source of information and promote its use and value among PHC practitioners. It may also increase their acceptance of the process. HIV/AIDS patients and the society in general may benefit from well-implemented HIV/AIDS treatment guidelines which should lead to improved health of people living with HIV.

Are there risks involved in you taking part in this research and what will be done to prevent them?

Risks	Precautions
Filling in the structured questionnaire and participation in the face-to-face interview could cause some emotional distress.	All answers will be kept completely confidential. No names will be reported. You will be reminded during the introductory meeting that you have the right to withdraw at any stage of the interview until the final conclusion of the interview If you feel any signs of stress during the face-to-face interview you can ask to stop the interview. You will be interviewed face-to-face in the privacy of a specific office.
You may be worried that there may be a feedback loop between you and the DHMT manager regarding your participation or refusal to participate in the study.	All researchers involved with the project will also sign a confidentiality agreement; therefore, no level of management of the Ministry of Health of Lesotho will be informed about your possible participation or refusal to participate. Your signed informed consent form will be placed in a sealed box. Your colleagues will not know who did participate and who did not participate. There will be no link between you and your informed consent form. You have the right to decline answering a question during the face-to-face interview.
You may feel uncomfortable to answer certain questions.	The researcher will inform you that you have the right to decline answering a specific question or to skip it or to answer it later. Otherwise, you may also withdraw from the survey altogether.

How will we protect your confidentiality and who will see your findings?

Anonymity and confidentiality will be ensured throughout the study: During the interview, the researcher will not document your name in order to keep your identity confidential. You will received two informed consent forms to sign. You will have to place one copy in a separate sealed box at the secretary's office and you should keep the other copy. The researcher and the promoters will sign a confidentiality agreement. No name or any form of identification of staff will be used. Information will not be shared with any other person or other member of the staff of the Ministry of Health in Lesotho.

What will happen with the findings or samples?

The completed questionnaires will be stored safely in a locked cupboard in the researcher's office. Electronic data will be protected from unauthorized persons by means of a password protected computer of the researcher for the duration of the data gathering period.

Once the data capturing process is completed, these documents and electronic data will be kept for the regulatory seven years at the research entity at the North-West University, where

after the documents will be dealt with as per North-West University policy. Data from this study will be used only for this study.

How will you know about the results of this research?

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players including the manager of HIV/AIDS programme, DHMT manager of all ten districts and the superintendent of each of the 18 hospitals.

A hard copy of the research report will also be made available to the Ministry of Health, Lesotho. The findings of the study will be published as research articles and also presented at conferences. The study results will be presented to the NWU (Potchefstroom Campus) as a thesis in order to complete the PhD in Pharmacy Practice programme. No direct feedback will be given to individual healthcare professionals.

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

The interview will be carried out at a time and place convenient for you, therefore there will be no cost related to the interview incurred by you.

Is there anything else that you should know or do?

You can contact Prof Martie S Lubbe at 018-2992288 (Work) 082-564-6583 (cell) Maseabata Ramathebane at 00266-58021675 (cell) or **mvramathebane@gmail.com**, **mv.ramathebane@nul.ls** if you have any further questions or have any problems.

You can also contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 1206 or **carolien.vanzyl@nwu.ac.za** if you have any concerns that were not answered about the research or if you have complaints about the research.

You will receive a copy of this information and consent form for your own purposes.

Declaration by healthcare professional

By signing below, I …….…… agree to take part in the research study titled: *Evaluation of factors affecting implementation of HIV/AIDS treatment guidelines in Lesotho*

I declare that:

I have read this information/it was explained to me by a trusted person in a language with which I am fluent and comfortable. The research was clearly explained to me. I have had

a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered. I understand that taking part in this study is voluntary and I have not been pressurised to take part. I may choose to leave the study at any time and will not be handled in a negative way if I do so. I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

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

..... **.....**

Signature of healthcare professional **Signature of witness**

Declaration by person obtaining consent

I *(name)* ……..……. declare that:

I clearly and in detail explained the information in this document to

……..

I did/did not use an interpreter. I encouraged him/her to ask questions and took adequate time to answer them. I am satisfied that he/she adequately understands all aspects of the research, as discussed above. I gave him/her time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of person obtaining consent Signature of witness

Declaration by researcher

I *(name)* ……..……. declare that:

I explained the information in this document to ……..

I did not use an interpreter. I was available should he/she want to ask any further questions. The informed consent was obtained by an independent person. I am satisfied that he/she adequately understands all aspects of the research, as described above. I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of researcher **Signature of witness**

ANNEXURE F: INFORMED CONSENT FORM - LEVEL 3: HEALTH CARE PRACTITIONERS IN PHC CLINICS

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR PHC (OPD AND ART CLINIC) PRACTITIONERS WHO WILL COMPLETE THE SELF-ADMINISTERED QUESTIONNAIRE

TITLE OF THE RESEARCH STUDY: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

ETHICS REFERENCE NUMBERS: NWU-00136-17-S1

PRINCIPAL INVESTIGATOR: Professor Martie S. Lubbe

POST-GRADUATE STUDENT (researcher): Maseabata V. Ramathebane

ADDRESS: **North-West University (Potchefstroom Campus)**

Potchefstroom

Private Bag X6001

Potchefstroom 2520

CONTACT NUMBER: 018-2992288 (Work) 082-564-6583 (cell)

You are being invited to take part in a **research study** that forms part of my study to be submitted in fulfilment of the requirements of the PhD in Pharmacy Practice titled: *Evaluation of factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho.*

Please take some time to read through the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to refuse to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU) and Ministry of Health (MOH) of Lesotho and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (South Africa DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records.

What is this research study all about?

The general aim of this study is to evaluate the processes and factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.

This study will be conducted at PHC clinics. It will involve the completion of a structured questionnaire by all PHC practitioners employed in PHC facilities (ART clinics and outpatient departments of hospitals) in Lesotho. Approximately 229 healthcare professionals will be included in this study. The research will also be conducted at HIV/AIDS programmes and the District Health Management Team (DHMT) with an approximate number of 400 healthcare professionals who are all health practitioners.

Why have you been invited to participate?

You have been invited to participate because you are an employee in one of the PHC facilities (OPD or ART clinic) in Lesotho, working as a health practitioner and the manager of the PHC facility gave permission for the study to take place. You also comply with the inclusion criteria because you are a health practitioner working in a PHC facility (OPD or ART clinic) and your work includes the use of HIV/AIDS treatment guidelines. You will be excluded if you are absent from work during the period of data gathering, or could not be followed up.

What will be expected of you?

If you agree to participate, you will be expected to sign two copies of the informed consent forms and put one copy in a separate box in the secretary's office before you fill in the self-administered questionnaire. You are allowed to keep the other copy of the informed consent form for yourself. You are expected to fill in a structured questionnaire if you agree to participate. You will take about an hour to fill in the self-administered questionnaire. There are eight sections in the questionnaire, about 140 questions in total and most of the questions are closed-ended with a few open-ended questions. You may decline to answer some of the questions or withdraw completely from the study. The completion of the questionnaires is the only responsibility that you will have regarding this study.

Will you gain anything from taking part in this research?

If you participate in the study, you will have the opportunity to share your views regarding the problems that may be experienced with the implementation of HIV/AIDS treatment guidelines in Lesotho as well as possible solutions to improve the practice situation. The Ministry of Health as well as the members of the HIV/AIDS programme will benefit as no such study has been carried out on the evaluation of the implementation of HIV/AIDS treatment guidelines in Lesotho. This study may inform them regarding the best implementation processes and policies to follow during the implementation of new guidelines, specifically HIV/AIDS treatment guidelines. PHC managers may view HIV/AIDS treatment guidelines as an important source of information and promote its use and value among PHC practitioners. It may also increase their acceptance of the process. HIV/AIDS patients and society in general may benefit from well-implemented HIV/AIDS treatment guidelines which lead to improved health of people living with HIV and AIDS.

Are there risks involved in you taking part in this research and what will be done to prevent them?

Risks	**Precautions**
Filling in the structured questionnaire and participation in the face-to-face interview could cause some emotional distress.	All answers will be kept completely confidential. No names will be reported. You will be reminded during the introductory meeting that you have the right to withdraw at any stage of the interview until the final conclusion of the interview If you feel any signs of stress during the face-to-face interview you can ask to stop the interview. You will be interviewed face-to-face in the privacy of a specific office.
You may be worried that there may be a feedback loop between you and the	All researchers involved with the project will also sign a confidentiality agreement; therefore, no level of management of the Ministry of Health of Lesotho will be

PHC manager regarding your participation or refusal to participate in the study.	informed about your possible participation or refusal to participate. Your signed informed consent form will be placed in a sealed box. Your colleagues will not know who did participate and who did not participate. There will be no link between you and your informed consent form. You have the right to decline answering a question during the face-to-face interview.
You may feel uncomfortable to answer certain questions.	The researcher will inform you that you have the right to decline answering a specific question or to skip it or to answer it later. Otherwise, you may also withdraw from the survey altogether.

How will we protect your confidentiality and who will see your findings?

Anonymity and confidentiality will be ensured as follows: Informed consent forms will be provided and signed by all healthcare professionals and one copy will be placed in a separate sealed box and the other kept by the healthcare professional. The researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person.

The researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person or other member of the staff of the Ministry of Health.

The completed questionnaires will be stored safely in a locked cupboard in the researcher's office and electronic data will be protected from unauthorized persons by means of a password-protected file on the computer of the researcher for the duration of the data-gathering period.

Once the data-capturing process has been completed, these documents and electronic data will be kept for the regulatory seven years, after which the documents will be dealt with as per NWU policy.

What will happen with the findings or samples?

The study results will be presented to the NWU (Potchefstroom Campus) as a thesis in order to complete the PhD in Pharmacy Practice programme. No direct feedback will be given to the individual healthcare professionals.

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of HIV/AIDS programme,

the DHMT managers of all ten districts and superintendent of each of the 18 hospitals. Data from this study will be used only for this study.

A hard copy of the research report will also be made available to the Ministry of Health, Lesotho. The results will also be made available to the research community in published articles and conference presentations.

How will you know about the results of this research?

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of HIV/AIDS programme, DHMT manager of all ten districts and superintendent of each of the 18 hospitals. A hard copy of the research report will also be made available to the Ministry of Health, Lesotho.

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

The interviews will be carried out at a time and place convenient to the healthcare professionals, therefore there will be no cost related to the interview incurred by the healthcare professionals. Mediators will be given airtime vouchers to facilitate data collection at the ART clinics.

Is there anything else that you should know or do?

You can contact Prof Martie S Lubbe at 018-2992288 (Work) 082-564-6583 (cell) Maseabata Ramathebane at 00266-58021675 (cell) or **mvramathebane@gmail.com**, **mv.ramathebane@nul.ls** if you have any further questions or have any problems.

You can also contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 1206 or **carolien.vanzyl@nwu.ac.za** if you have any concerns that were not answered about the research or if you have complaints about the research.

You will receive a copy of this information and consent form for your own purposes.

Declaration by healthcare professional

By signing below, I …….…… agree to take part in the research study titled: Evaluation of factors affecting implementation of HIV/AIDS treatment guidelines in Lesotho

I declare that:

I have read this information/it was explained to me by a trusted person in a language in which I am fluent and comfortable. The research was clearly explained to me. I have had a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered. I understand that taking part in this study is **voluntary** and I have not been pressurised to take part. I may choose to leave the study at any time and will not be handled in a negative way if I do so. I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

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

..... **.....**

Signature of healthcare professional **Signature of witness**

Declaration by person obtaining consent

I (name) ……..…… declare that:

I clearly and in detail explained the information in this document to

……

I did/did not use an interpreter. I encouraged him/her to ask questions and took adequate time to answer them. I am satisfied that he/she adequately understands all aspects of the research, as discussed above. I gave him/her time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of person obtaining consent **Signature of witness**

Declaration by researcher

I (name) ……..…… declare that:

I explained the information in this document to ……..

I did not use an interpreter. I was available should he/she want to ask any further questions. The informed consent was obtained by an independent person. I am satisfied that he/she adequately understands all aspects of the research, as described above. I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of researcher **Signature of witness**

ANNEXURE G: INFORMED CONSENT FORM - LEVEL 3: HEALTH CARE PRACTITIONER IN OPD

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR HOSPITAL ADMINISTRATION WHO WILL FILL IN THE SELF-ADMINISTERED QUESTIONNAIRE

TITLE OF THE RESEARCH STUDY: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

ETHICS REFERENCE NUMBERS: NWU-00136-17-S1

PRINCIPAL INVESTIGATOR: Professor Martie S. Lubbe

POST-GRADUATE STUDENT (researcher): Maseabata V. Ramathebane

ADDRESS: **North-West University (Potchefstroom Campus)**

Potchefstroom

Private Bag X6001

Potchefstroom 2520

CONTACT NUMBER: 018-2992288 (Work) 082-564-6583 (cell)

You are being invited to take part in a **research study** that forms part of my study in fulfilment of the requirements for the PhD in Pharmacy Practice titled: *Evaluation of factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho*.

Please take some time to read through the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to refuse to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU) and Ministry of Health (MOH) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (South Africa DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records**.**

What is this research study all about?

The general aim of this study is to evaluate the processes and factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.

This study will be conducted at the OPD in the allocated office. A structured questionnaire will be self-administered. About 54 healthcare professionals will be included in this study. The research will also be conducted at HIV/AIDS programme, DHMT and ART clinics with an approximate number of 400 healthcare professionals who are health practitioners.

Why have you been invited to participate?

You have been invited to participate in this research because you are employee of the hospital OPD as a health practitioner and your director gave permission for the study to take place and allowed that the staff member may be interviewed. You also fit the research because you are an available health practitioner working in a Hospital OPD and your work includes the use of HIV/AIDS treatment guidelines. You will excluded if you are absent from work during the period of data gathering, or could not be followed up.

What will be expected of you?

If you agree to participate, you will be expected to sign two copies of the informed consent forms and put one copy in a separate box in the secretary's office before you fill in the self-

administered questionnaire. You are allowed to keep the other copy of the informed consent form for yourself. You are expected to fill in a structured questionnaire if you agree to participate. You will take about an hour to fill in the self-administered questionnaire; there are eight sections in the questionnaire, and 142 questions in total and most of the questions are closed-ended with a few open-ended questions. You may decline to answer some of the questions or withdraw completely from the study. The completion of the questionnaires is the only responsibility that you will have regarding this study.

Will you gain anything from taking part in this research?

If you participate in the study, you will have the opportunity to share your views regarding the problems that may be experienced with the implementation of HIV/AIDS treatment guidelines in Lesotho as well as possible solutions to improve the practice situation. The Ministry of Health as well as the members of the HIV/AIDS programme will benefit as no such study has been carried out on the evaluation of the implementation of HIV/AIDS treatment guidelines in Lesotho. This study may inform them regarding the best implementation processes and policies to follow during the implementation of new guidelines, specifically HIV/AIDS treatment guidelines. PHC managers may view HIV/AIDS treatment guidelines as an important source of information and promote its use and value among PHC practitioners. It may also increase their acceptance of the process. HIV/AIDS patients and the society in general may benefit from well-implemented HIV/AIDS treatment guidelines which could lead to improved health of people living with HIV and AIDS.

Are there risks involved in you taking part in this research and what will be done to prevent them?

Risks	**Precautions**
Filling in the structured questionnaire could cause some emotional distress.	All answers will be kept completely confidential. No names will be reported. You will be reminded during the introductory meeting that you have the right to withdraw at any stage of the interview until the final conclusion of the interview If you feel any signs of stress during the face-to-face interview you can ask to stop the interview. You will be interviewed face-to-face in the privacy of a specific office.
You may be worried that there may be a feedback loop between you and PHC manager regarding your participation or refusal to participate in the study.	All researchers involved with the project will also sign a confidentiality agreement; therefore, no level of management of the Ministry of Health of Lesotho will be informed about your possible participation or refusal to participate. Your signed informed consent form will be placed in a sealed box. Your colleagues will not know who did

	participate and who did not participate. There will be no link between you and your informed consent form. You have the right to decline answering a question during the face-to-face interview.
You may feel uncomfortable to answer certain questions.	The researcher will inform you that you have the right to decline answering a specific question or to skip it or to answer it later. Otherwise, you may also withdraw from the survey altogether.

How will we protect your confidentiality and who will see your findings?

Anonymity and confidentiality will be ensured as follows: Informed consent forms will be provided and signed by all healthcare professionals and one copy will be placed in a separate sealed box and the other kept by the healthcare professional. Researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person.

The researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person or other member of the staff of the Ministry of Health.

The completed questionnaires will be stored safely in a locked cupboard in the researcher's office and electronic data will be protected from unauthorized persons by means of a password-protected file on the computer of the researcher for the duration of the data-gathering period.

Once the data-capturing process is completed, these documents and electronic data will be kept for the regulatory seven years, after which the documents will be dealt with as per NWU policy.

What will happen with the findings or samples?

The study results will be presented to the NWU (Potchefstroom Campus) as a thesis in order to complete the PhD in Pharmacy Practice programme. No direct feedback will be given to the individual healthcare professionals; however, a report will be given to the facilities.

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of the HIV/AIDS programme, DHMT managers of all ten districts and the superintendent of each of the 18 hospitals. Data from this study will be used only for this study.

A hard copy of the research report will also be made available to the Ministry of Health, Lesotho. The results will also be made available to the research community in published articles and conference presentations

How will you know about the results of this research?

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of the HIV/AIDS programme, DHMT managers of all ten districts and the superintendent of each of the 18 hospitals. A hard copy of the research report will also be made available to the Ministry of Health, Lesotho.

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

The interviews will be carried out at the time and place convenient to the healthcare professionals, therefore there will be no costs related to the interview incurred by the healthcare professionals. Mediators will be given airtime vouchers to facilitate data collection at the ART clinics.

Is there anything else that you should know or do?

You can contact Prof Martie S Lubbe at 018-2992288 (Work) 082-564-6583 (cell) Maseabata Ramathebane at 00266-58021675 (cell) or **mvramathebane@gmail.com**, **mv.ramathebane@nul.ls** if you have any further questions or have any problems.

K2You can also contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 1206 or **carolien.vanzyl@nwu.ac.za** if you have any concerns that were not answered about the research or if you have complaints about the research.

You will receive a copy of this information and consent form for your own purposes.

Declaration by healthcare professional

By signing below, I …….…… agree to take part in the research study titled: *Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.*

I declare that:

I have read this information/it was explained to me by a trusted person in a language in which I am fluent and comfortable. The research was clearly explained to me. I have had a chance to ask questions to both the person getting the consent from me, as well as the

researcher and all my questions have been answered. I understand that taking part in this study is **voluntary** and I have not been pressurised to take part. I may choose to leave the study at any time and will not be handled in a negative way if I do so. I may be asked to leave the study before it has finished, if the researcher feels it is in the best interests of all, or if I do not follow the study plan, as agreed to.

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

..... **.....**

Signature of healthcare professional **Signature of witness**

Declaration by person obtaining consent

I (name) ……..……. declare that:

I clearly and in detail explained the information in this document to

……..

I did/did not use an interpreter. I encouraged him/her to ask questions and took adequate time to answer them. I am satisfied that he/she adequately understands all aspects of the research, as discussed above. I gave him/her time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of person obtaining consent Signature of witness

Declaration by researcher

I (name) ……..……. declare that:

I explained the information in this document to ……..

I did not use an interpreter. I was available should he/she want to ask any further questions. The informed consent was obtained by an independent person. I am satisfied that he/she adequately understands all aspects of the research, as described above. I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

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

..... **.....**

Signature of researcher **Signature of witness**

ANNEXURE H: INFORMED CONSENT FORM – LEVEL 3: PHC MANAGER

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR PHC MANAGER WHO WILL FILL IN THE SELF-ADMINISTERED QUESTIONNAIRE

TITLE OF THE RESEARCH STUDY: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

ETHICS REFERENCE NUMBERS: NWU-00136-17-S1

PRINCIPAL INVESTIGATOR: Professor Martie S. Lubbe

POST GRADUATE STUDENT (Researcher): Mrs. Maseabata V. Ramathebane

ADDRESS: **North-West University (Potchefstroom Campus)**

Potchefstroom

Private Bag X6001

Potchefstroom 2520

CONTACT NUMBER: 018-2992288 (Work) 082-564-6583 (cell)

You are being invited to take part in a **research study** that forms part of my study to be submitted in fulfilment of the requirements for the PhD in Pharmacy Practice titled: *Evaluation of factors that affect the implementation of HIV/AIDS treatment guidelines in Lesotho*.

Please take some time to read through the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to say no to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the Health Research Ethics Committees of the Faculty of Health Sciences of the North-West University (NWU) and the Ministry of Health (MOH) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (South Africa DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records**.**

What is this research study all about?

The general aim of this study is to evaluate the processes and factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.

This study will be conducted at DHMT in the allocated office during monthly meetings. A structured questionnaire will be used. About 156 healthcare professionals will be included in this study. The research will also be conducted at HIV/AIDS programme, DHMT and PHC (ART clinics and OPD) levels with an approximate number of 400 healthcare professionals who are health practitioners.

Why have you been invited to participate?

You have been invited to participate in the study because you are an employee of the ART clinic as a health practitioner and a clinic manager. The DHMT manager gave permission for the study to take place and for you to fill a self-administered questionnaire. You also fit the research project because your work includes the implementation of HIV/AIDS treatment guidelines. You will be excluded if you are absent from a monthly DHMT meeting.

What will be expected of you?

If you agree to participate, you will be expected to sign two copies of the informed consent forms and put one copy in a separate box in the secretary's office before you fill the self-administered questionnaire. You are allowed to keep the other copy of informed consent form for yourself. You are expected to fill a structured questionnaire if you agree to participate. You will take about an hour to fill the self-administered questionnaire, there are 140 questions in total and most of the questions are closed-ended with a few open-ended questions. However, if you are PHC manager and also the only one who prescribes at the facility you will answer 180 questions. You may decline to answer some of the questions or withdraw completely from the study.

Will you gain anything from taking part in this research?

If you participate in the study, you will have the opportunity to share your views regarding the problems that may experience with the implementation of HIV/AIDS treatment guidelines in Lesotho as well as possible solutions to improve the practice situation. The Ministry of Health as well as the members of the HIV/AIDS programme will benefit as no such study have been carried out on the evaluation of the implementation of HIV/AIDS treatment guidelines in Lesotho. This study may inform them regarding the best implementation processes and policies to follow during the implementation of new guidelines, specifically HIV/AIDS treatment guidelines. PHC managers may view HIV/AIDS treatment guidelines as an important source of information and promote its use and value among PHC practitioners. It may also increase their acceptance of the process. HIV/AIDS patients and the society in general may benefit from well-implemented HIV/AIDS treatment guidelines which lead to improved health of people living with HIV and AIDS.

Are there risks involved in you taking part in this research and what will be done to prevent them?

Risks	**Precautions**
Completing the structured questionnaire could cause some emotional distress.	All answers will be kept completely confidential. No names will be reported. You will be reminded during the introductory meeting that you have the right to withdraw at any stage of the interview until the final conclusion of the interview If you feel any signs of stress during the face-to-face interview you can ask to stop the interview. You will be interviewed face-to-face in the privacy of a specific office.
You may be worried that there may be a feedback loop between you and PHC manager regarding your	All researchers involved with the project will also sign a confidentiality agreement; therefore, no level of management of the Ministry of Health of Lesotho will be informed about your possible participation or refusal to participate.

participation or refusal to participate in the study.	Your signed informed consent form will be placed in a sealed box. Your colleagues will not know who did participate and who did not participate. There will be no link between you and your informed consent form. You have the right to decline answering a question during the face-to-face interview.
You may feel uncomfortable to answer certain questions.	The researcher will inform you that you have the right to decline answering a specific question or to skip it or to answer it later. Otherwise, you may also withdraw from the survey altogether.

How will we protect your confidentiality and who will see your findings?

Anonymity and confidentiality will be ensured as follows: Informed consent forms will be provided and signed by all healthcare professionals and one copy will be placed in a separate sealed box and the other kept by the healthcare professional. The researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person.

The researcher and the promoters will sign a confidentiality agreement. No names or any form of identification of staff will be used. Information will be kept safe and will not be shared with any other person or other member of the staff of the Ministry of Health.

The completed questionnaires will be stored safely in a locked cupboard in the researcher's office and electronic data will be protected from unauthorized persons by means of a password-protected file on the computer of the researcher for the duration of the data-gathering period.

Once the data-capturing process has been completed, these documents and electronic data will be kept for the regulatory seven years, after which the documents will be dealt with as per NWU policy.

What will happen with the findings or samples?

The study results will be presented to the NWU (Potchefstroom Campus) as a thesis in order to complete the PhD in the Pharmacy Practice programme. No direct feedback will be given to the individual healthcare professionals; however, a report will be given to the facilities.

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of the HIV/AIDS programme, DHMT managers of all ten districts and the superintendent of each of the 18 hospitals. Data from this study will be used only for this study.

A hard copy of the research report will also be made available to the Ministry of Health, Lesotho. The results will also be made available to the research community in published articles and conference presentations.

How will you know about the results of this research?

This research will be concluded with a dissemination session at the HIV/AIDS programme, DHMT including the PHC facilities during which time the results will be presented to all role-players. The findings of the research will be shared with the director of the HIV/AIDS programme, the DHMT managers of all ten districts and the superintendent of each of the 18 hospitals. A hard copy of the research report will also be made available to the Ministry of Health, Lesotho.

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

The interviews will be carried out at the time and place convenient to the healthcare professionals, therefore there will be no cost related to the interview incurred by the healthcare professionals. Mediators will be given airtime vouchers to facilitate data collection at the ART clinics.

Is there anything else that you should know or do?

- You can contact Prof Martie S Lubbe at 018-2992288 (Work) 082-564-6583 (cell) Maseabata Ramathebane at 00266-58021675 (cell) or mvramathebane@gmail.com, mv.ramathebane@nul.ls if you have any further questions or have any problems.
- You can also contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 1206 or carolien.vanzyl@nwu.ac.za if you have any concerns that were not answered about the research or if you have complaints about the research.
- You will receive a copy of this information and consent form for your own purposes.

Declaration by healthcare professional

By signing below, I …….…… agree to take part in the research study titled: *Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho.*

I declare that:

I have read this information/it was explained to me by a trusted person in a language in which I am fluent and comfortable. The research was clearly explained to me. I have had a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered. I understand that taking part in this study is

voluntary and I have not been pressurised to take part. I may choose to leave the study at any time and will not be handled in a negative way if I do so. I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

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

.....	**.....**
Signature of healthcare professional	**Signature of witness**

Declaration by person obtaining consent

I (name) ……..……. declare that:

- I clearly and in detail explained the information in this document to

  ……..

I did/did not use an interpreter. I encouraged him/her to ask questions and took adequate time to answer them. I am satisfied that he/she adequately understands all aspects of the research, as discussed above I gave him/her time to discuss it with others if he/she wished to do so.

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

.....	**.....**
Signature of person obtaining consent	**Signature of witness**

Declaration by researcher

I *(name)* ……..……. declare that:

I explained the information in this document to ……..
I did not use an interpreter. I was available should he/she want to ask any further questions. The informed consent was obtained by an independent person. I am satisfied that he/she adequately understands all aspects of the research, as described above. I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

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

.....	**.....**
Signature of researcher	**Signature of witness**

ANNEXURE I PERMISSION LETTER OF THE MINISTRY OF HEALTH: LESOTHO

LESOTHO

Ministry of Health
PO Box 514
Maseru 100

REF: ID86-2017

Date: May 23, 2017

Category of Review:
[x] Initial Review
[ ] Continuing Annual Review
[ ] Amendment/Modification
[ ] Reactivation
[ ] Serious Adverse Event
[ ] Other _____

To:
Maseabata Ramathebane (Mrs.)
PI
HOD-Pharmacy Department, NUL

Dear Ms. Maseabata,

RE: Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

This is to inform you that on 15 May, 2017 the Ministry of Health Research and Ethics Committee reviewed and **APPROVED** the renewal of approval for the above study and hereby authorizes you to conduct the study according to the activities and population specified in the protocol. Departure from the approved protocol will constitute a breach of this permission.

This approval includes review of the following attachments:
[x] Protocol dated 2017
[x] English consent forms dated 2017
[ ] Sesotho consent forms
[x] Data collection forms
[ ] Participant materials
[ ] Other materials: CV of the PI dated 2017

This approval is **VALID** until May 22, 2018.

Please note that an annual report and request for renewal, if applicable, must be submitted at least 6 weeks before the expiry date.

All serious adverse events associated with this study must be reported promptly to the MOH Research and Ethics Committee. Any modifications to the approved protocol or consent forms must be submitted to the committee prior to implementation of any changes.

We look forward to receiving your progress reports and a final report at the end of the study. If you have any questions, please contact the Research and Ethics Committee at rcumoh@gmail.com (or) 22226317.

Sincerely,

Dr. Nyane Letsie
Director General Health Services

Dr. Amelia Ranotsi
Chairperson NH-IRB

ANNEXURE J PERMISSION LETTER OF THE CHRISTIAN HEALTH ASSOCIATION OF LESOTHO (CHAL)

Christian Health Association of Lesotho
P.O. Box 1632, Maseru 100, Lesotho
Telephone: +266 2231 2500, Fax: +266 2231 0314
E-mail: ed@chal.org.ls Website: www.chal.org.ls

29th January 2018

Ms. Maseabata Ramathebane

HOD- Pharmacy Department, NUL

Roma 180

Maseru, Lesotho

Dear Ms Ramathebane,

Re: Permission to conduct a study on Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

With this letter you are given permission to continue with the study thereto in CHAL facilities (Hospitals and Health Centres) as per the subject above and the approved protocol. However, kindly observe the following as related conditions.

1) Brief introductory session of the study to the Hospital Administrators and Health Centre Managers upon arrival.
2) The findings/report of the study should be shared with CHAL upon completion.

Hoping for your understanding and cooperation in the matter.

Yours sincerely,

Lebohang Mothae (Ms)
Executive Director

Registered as No. 74/12 under Society's Act of 1966

ANNEXURE K PERMISSION LETTER OF THE DIRECTORATE OF DISEASE CONTROL AND HIV/AIDS PROGRAMME

Ministry of Health
P.O Box 514
Maseru 100
Lesotho

Date: 2018-03-07

Principal investigator
North-West University (Potchefstroom Campus)
Potchefstroom
Private Bag X6001
Potchefstroom 2520

Dear Madam,

Re: Goodwill permission to carry out a study entitled: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

You are granted goodwill permission to carry out the above mentioned study. The permission is granted on the grounds that the study meets MOH Ethics and review board and HREC from North West University. Any deviation from this will result in termination of this permission.

We would like to wish you well in your research endeavour .

Yours sincerely,

Name: Dr. Maselinyane Letsie

Position: Director Disease Control.

Stamp of the facility

DISEASE CONTROL DIRECTORATE MOH
SECRETARY
2018 -03- 07
TEL: 22323453
FAX: 22324725
BOX 514, MASERU, LESOTHO

ANNEXURE L PERMISSION LETTER OF THE DHMT (ONE EXAMPLE)

DHmt Thabatseka
P.O. Box 197
Thaba-Tseka
550
Date: 06/12/2017

Principal investigator
North-West University (Potchefstroom Campus)
Potchefstroom
Private Bag X6001
Potchefstroom 2520

Dear Madam,

Re: Goodwill permission to carry out a study entitled: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

You are granted goodwill permission to carry out the above mentioned study. The permission is granted on the grounds that the study meets MOH Ethics and review board and HREC from North West University. Any deviation from this will result in termination of this permission.

We would like to wish you well in your research endeavour .

Yours sincerely,

Name: MAJANE MAHAPANG
Position: Public HEALTH NURSE

Stamp of the facility.

MINISTRY OF HEALTH
PUBLIC HEALTH NURSE
2017 -12- 06
THABA-TSEKA DHMT
TEL.: 22900408

ANNEXURE M PERMISSION LETTER OF THE CEO OF HOSPITAL WITH OPD (ONE EXAMPLE)

Paray Mission Hospital
Box 2
Thaba - Tseka 550

Date: 15/03/2018

Principal investigator
North-West University (Potchefstroom Campus)
Potchefstroom
Private Bag X6001
Potchefstroom 2520

Dear Madam,

Re: Goodwill permission to carry out a study entitled: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

You are granted goodwill permission to carry out the above mentioned study. The permission is granted on the grounds that the study meets MOH Ethics and review board and HREC from North West University. Any deviation from this will result in termination of this permission.

We would like to wish you well in your research endeavour .

Yours sincerely,

Name: Majubere Lepae-Ranthutlu
Position: Coordinator Departmental Nursing Service

Stamp of the facility.

ANNEXURE N PERMISSION LETTER FROM PHC FACILITY (ONE EXAMPLE)

MOKOTO H/C
P O BOX 197
THATSEKA
100

Date: 16-03-18

Principal investigator
North-West University (Potchefstroom Campus)
Potchefstroom
Private Bag X6001
Potchefstroom 2520

Dear Madam,

Re: Goodwill permission to carry out a study entitled: **Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho**

You are granted goodwill permission to carry out the above mentioned study. The permission is granted on the grounds that the study meets MOH Ethics and review board and HREC from North West University. Any deviation from this will result in termination of this permission.

We would like to wish you well in your research endeavour .

Yours sincerely,

Name: T MONICA MATHABO

Position: NURSING OFFICER

Stamp of the facility.

MOKOTO HEALTH CENTRE
THABA-TSEKA
16 MAR 2018
TEL: 22900211, FAX: 22900511
P.O.BOX 197, THABA-TSEKA

ANNEXURE O ETHICS APPROVAL

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: http://www.nwu.ac.za

Health Sciences Ethics Office for Research, Training and Support

Health Research Ethics Committee (HREC)
Tel: 018-285 2291
Email: Wayne.Towers@nwu.ac.za

Prof MS Lubbe
Pharmacy Practice-MUSA

17 April 2018

Dear Prof Lubbe

APPROVAL OF YOUR APPLICATION BY THE HEALTH RESEARCH ETHICS COMMITTEE (HREC) OF THE FACULTY OF HEALTH SCIENCES

Ethics number: NWU-00136-17-S1

Kindly use the ethics reference number provided above in all future correspondence or documents submitted to the administrative assistant of the Health Research Ethics Committee (HREC) secretariat.

Study title: Evaluation of factors affecting the implementation of HIV/AIDS treatment guidelines in Lesotho

Study leader: Prof MS Lubbe

Student: MV Ramathebane-21057443

Application type: Single study

Risk level: Minimal (monitoring report required annually)

Expiry date: 30 April 2019

You are kindly informed that after review by the HREC, Faculty of Health Sciences, North-West University, your ethics approval application has been successful and was determined to fulfil all requirements for approval. Your study is approved for a year and may commence from 17/04/2018. Continuation of the study is dependent on receipt of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation. A monitoring report should be submitted two months prior to the reporting dates as indicated i.e. annually for minimal risk studies, six-monthly for medium risk studies and three-monthly for high risk studies, to ensure timely renewal of the study. A final report must be provided at completion of the study or the HREC, Faculty of Health Sciences must be notified if the study is temporarily suspended or terminated. The monitoring report template is obtainable from the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-HRECMonitoring@nwu.ac.za. Annually, a number of studies may be randomly selected for an internal audit.

The HREC, Faculty of Health Sciences requires immediate reporting of any aspects that warrants a change of ethical approval. Any amendments, extensions or other modifications to the proposal or other associated documentation must be submitted to the HREC, Faculty of Health Sciences prior to implementing these changes. These requests should be submitted to Ethics-HRECApply@nwu.ac.za with a cover letter with a specific subject title indicating, "Amendment request: NWU-XXXXX-XX-XX". The letter should include the title of the approved study, the names of the researchers involved, the nature of the amendment/s being made (indicating what changes have been made as well as where they have been made), which documents have been attached and any further explanation to clarify the amendment request being submitted. The amendments made should be indicated in yellow highlight in the amended documents. The *e-mail*, to which you attach the documents that you send, should have a *specific subject line* indicating that it is an amendment request e.g. "Amendment request: NWU-XXXXX-XX-XX". This e-mail should indicate the nature of the amendment. This submission will be handled via the expedited process.

Any adverse/unexpected/unforeseen events or incidents must be reported on either an adverse event report form or incident report form to Ethics-HRECIncident-SAE@nwu.ac.za. The *e-mail*, to which you attach the documents that you send, should have a specific subject line indicating that it is a notification of a serious adverse event or incident in a specific project e.g. "SAE/Incident notification: NWU-XXXXX-XX-XX". Please note that the HREC, Faculty of Health Sciences has the prerogative and authority to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.

The HREC, Faculty of Health Sciences complies with the South African National Health Act 61 (2003), the Regulations on Research with Human Participants (2014), the Ethics in Health Research: Principles, Structures and Processes (2015), the Belmont Report and the Declaration of Helsinki (2013).

We wish you the best as you conduct your research. If you have any questions or need further assistance, please contact the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-HRECApply@nwu.ac.za.

Yours sincerely

Prof Wayne Towers
HREC Chairperson

Prof Minrie Greeff
Ethics Office Head

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30 April 2018

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ANNEXURE P OPEN ENDED QUESTIONS AND ANSWERS

IMPLEMENTATION PROCESSES

Table 1 Implementation processes at the HIV/AIDS programme

HIV/AIDS programme
Q. 1.3.1 In which year was the last review of the HIV/AIDS treatment guidelines? **A.** 2013. Response (n=5), no response (n=0)
Q. 1.3.2 Describe the process of reviewing the HIV/AIDS treatment guidelines **A.** Announcement of change in the guidelines, adoption of treatment guidelines, training of healthcare workers, stakeholder meeting, finalisation of guidelines and printing, share report from WHO, formation of task team, share report, training of health care providers. Response (n=5), no response (n=0)
Q. 1.3.3 Which source of information was used when you reviewed the HIV/AIDS treatment guidelines? **A**. WHO treatment guidelines 2015. Response (n=5), no response (n=0)
Q. 1.3.4 Describe the technical working group members involved when HIV/AIDS treatment guidelines are reviewed in terms of organisation (healthcare facility), qualification, experience and work title. **A.** EGPAF, PEPFAR, EQUIP, CHEMONICS, laboratory, HIV/AIDS programme, TB programme, family health, doctors, nurses, pharmacists, WHO, BCMF, LENASO, AHF, CDC, UNAIDS. Response (n=5), no response (n=0)
Q. 1.3.5 Describe the process of adoption of the latest HIV/AIDS treatment guidelines **A.** WHO released new treatment guidelines, reviewing of guidelines by MOH, sensitisation of senior managers, when WHO has new guidelines the team discuss it and then adopt it, consultative stakeholder meeting held. Response (n=5), no response (n=0)
Q. 1.3.6 List the stakeholders who participated in the adoption meeting of the latest HIV/AIDS treatment guidelines? **A.** MOH programmes, laboratory, pharmacy, CHAI, EGPAF, PEPFAR, CHEMONICS, EQUIP, SOLIDAMED, CHAL, Mothers To Mothers, WHO, BCMF, LENASO, AHF, CDC, UNAIDS. Response (n=5), no response (n=0)
Q. 1.3.7 How often are the HIV/AIDS treatment guidelines of Lesotho published? **A.** Each time there is a need. Response (n=5), no response (n=0)
Q .1.4.1 In the adoption and dissemination of the latest HIV/AIDS treatment guidelines, was there an implementation plan? **A.** Yes (n=5), no (n= 0), no response (n=0)
Q. 1.4.1.1 If **yes**, describe the implementation plan for the latest HIV/AIDS treatment guidelines **A.** Sensitisation of senior management, sensitisation workshop for healthcare workers, training of healthcare workers, meetings with technical working groups, adoption of, schedule, roadmap. Response (n=5), no response (n=0)
Q. 1.4.2 Which level of healthcare is the area of focus for the implementation of the latest HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities?

A. PHC clinic. Response (n=5), no response (n=0)
Q. 1.4.3 Was there any training of the staff members from the area of focus on the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes(n= 5), no (n=0), no response (n=0)
Q. 1.4.3.1 If **yes**, which topics were covered in the training when the latest HIV/AIDS treatment guidelines were implemented? **A.** Changes in the treatment guidelines, clinical management requirements, and new laboratory tests. Response (n=5), no response (n=0)
Q.1.4.3.2 If **no**, how are the health facilities staff informed about the changes in the latest HIV/AIDS treatment guidelines? **skip question** **A.** No response
Q. 1.4.4 Is there operational research planned to go hand in hand with the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4)
Q. 1.4.4.1 If **no,** describe how do you measure success or failure of the implementation of the HIV/AIDS treatment guidelines? **skip question** **A.** No response
Q. 1.4.4.2 If **yes**, how often is the operational research carried out? **A.** Once a year. Response (n=1), no response (n=4)
Q. 1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4
Q. 1.4.5 At the DHMT level, is there a staff member in each district who is assigned the responsibility of the implementation of HIV/AIDS treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4)
Q. 1.4.5.1 If **no**, is the implementation of latest HIV/AIDS treatment guidelines regarded as part of the routine workload of assigned staff member at the DHMT? (skip question) **A.** No response
Q. 1.4.5.2 If **no**, please state what happens to their routine workload at the DHMT when the staff member has to spend more time with the implementation of HIV/AIDS treatment guideline? **A**. No response
Q. 1.4.6 In your opinion, which aspects of the previous HIV/AIDS treatment guidelines were fully implemented? **A.** No response
Q. 1.5.1 When implementing the latest HIV/AIDS treatment guidelines, do you have task agreements for performance monitoring with DHMT and /or HIV/AIDS programme personnel responsible for implementing these at district level? **A.** Yes (n=1), no (n=0), no response (n=4)
Q. 1.5.1.1 If **yes**, how do you carry out performance evaluation of personnel involved with the implementation of the latest HIV/AIDS treatment guidelines? **A.** Through report sent to MOH. Response (n=1), no response (n=4)
Q. 1.5.1.2 If **no**, how do you assess performance of the DHMT and / or HIV/AIDS program member responsible for the implementation of the latest HIV/AIDS treatment guidelines? **A.** No response

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Table 2 Implementation processes at the DHMT

DHMT
Q. 1.3.1 Were you involved in the last review of the HIV/AIDS treatment guidelines? **A.** Yes (n=3, 11.1%), no (n=22, 81.5%), no response (n=2, 7.4%)
Q. 1.3.1.1 If yes, list the sources of information that were used when you reviewed the HIV/AIDS treatment guidelines? **A**. Previous HIV/AIDS guidelines, reporting tools used, DHIS 2 system, slides, and co-infections in HIV/TB guidelines. Response (n=3), no response (n=24).
Q. 1.3.2 What was your specific role in the review and adoption of the latest HIV/AIDS treatment guidelines? **A**. To do step-down training at district level, participant in the meeting. Response (n=3), no response (n=24).
Q. 1.3.3 Were you satisfied with the input you provided? **A.** Yes (n=3, 11.1%), no (n=16, 59.3%), no response (n=2, 7.4%)
Q. 1.3.3.1 If no, state why you were not satisfied? (**skip question**) **A**. No response
Q. 1.3.4 State the edition and year of publication of the latest HIV/AIDS treatment guidelines the facility has. **A.** 5th edition 2016
Q. 1.4.1 Do you have an implementation plan for the latest (most recent) HIV/AIDS treatment guidelines from the HIV/AIDS programme? **A.** Yes (n=9, 33.3%), no (n=0, 0.0%), no response (n=24, 88.9%)
Q. 1.4.1.1 If yes, did you have a role to play in the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=19, 70.4%), no (n=8, 29.6%), no response (n=0, 0.0%)
Q. 1.4.1.2 If **yes**, describe the role you played in the implementation of the latest (most recent) HIV/AIDS treatment guidelines? **A.** Training and supervision of health care workers, supervision and monitoring of proper use of the guidelines by the facilities, participation in the dissemination of guidelines to the health workers in the district health centre nurses and other health workers, to avail ARV and laboratory commodities to achieve 90/90/90. Response (n=9), no response (n=18).
Q. 1.4.2 Which healthcare facilities are the areas of focus for implementation of the latest (most recent) HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities? **A.** Hospital, DHMT, PHC clinic. Response (n=13), no response (n=14).
Q. 1.4.3 Was there any training for the staff members of the area of focus for the implementation of the latest (most recent) HIV/AIDS treatment guidelines? **A.** Yes (n=13, 48.1%), no (n=0, 0.0%), no response (n=14, 51.9%)
Q. 1.4.3.1 If **yes**, describe how the training was carried out. **A.** 5 days' workshop, monthly supervision, off-side training and onsite training followed during mentoring, step-down training in-service training, training in the districts for hospital staff clinics and all health providers' staff for changes in 2016 guidelines. Response (n=12), no response (n=15).
Q. 1.4.3.2 If **no**, how were health professionals informed about the changes in the latest HIV/AIDS treatment guidelines? **A.** No response

Q. 1.4.4 Was there implementation research planned to go hand-in-hand with the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=3, 11.1%), no (n=9, 33.3%), no response (n=11, 40.7%)
Q. 1.4.4.1 If **no**, describe how you have measure success or failure regarding the implementation of the HIV/AIDS treatment guidelines**?** **A.** Use of monitoring and evaluation tool, monthly reports, the increase in the quantities of drugs requested, by measuring monthly reports against the targets, use of monthly report to DHMT from implementing facilities. Response (n=5), no response (n=22).
Q. 1.4.4.2 If yes, how often was operational research carried out? **A**. Yearly, monthly supervision, it is done on daily basis Response (n=3), no response (n=22).
Q. 1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines? **A.** Yes (n=3, 11.1%), no (n=1, 3.7%), no response (n=22, 41.5%)
Q. 1.5.1 In your supervisory capacity at the PHC, do you have a task agreement with PHC managers for their performance with regard to the implementation of HIV/AIDS treatment guidelines? **A.** Yes (n=17, 63.0%), no (n=6, 22.2%), no response (n=4, 14.8%)
Q. 1.5.1.1 If yes, how do you carry out performance evaluation of PHC managers on the implementation of the latest HIV/AIDS treatment guidelines? **A.** Check prescriptions and see if guidelines are followed, I check how many patients who were referred to the facility to be linked to care and initiated on art and whether SOP was followed, by mentoring the facility staff helping them to implement the changes, receiving of the PHC quarterly reports, monitor consumption against number of patients affected regimen, supervisory checklist, their achievement is measured against 90/90/90 target, assess and evaluate the work-plan of the PHC manager and identifying any gaps and resolve them, check number of patients put of ART monthly, using MOH assessment tool. Response (n=17), no response (n=10).

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Table 3 Implementation processes at the PHC

PHC level
Q. 1.2.4 Are care and treatment of HIV/AIDS according to the latest HIV/AIDS treatment guidelines? **A.** Yes (n=50, 57.5%), no (n=0, 0.0%), no response (n=37, 42.5%)
Q. 1.2.4.1 If **yes**, who consults HIV/AIDS patients at the PHC facility? **A**. Nurse (n=43, 49.4%), doctors (n=5, 5.7%), other (n=6, 10.5%), no response (n=39, 44.8%)
Q. 1.2.4.2 Who is responsible for ARV dispensing? **A.** Nurse (n=23, 26.4%), pharmacist (n=8 14.8%), pharmacy tech. (n=23, 26.4%), no response (n=38, 43.6%)
Q. 1.2.4.3 Who is responsible for drug supply of ARVs if there is no pharmacist in the PHC facility? **A.** Nurse (n=32, 36.7%), pharmacy tech. (n=17, 19.5%), others (n=4, 4.6%), no response (n=39, 44.8%)
Q. 1.3.1 What is the responsibility of the PHC manager regarding the latest HIV/AIDS treatment guidelines implementation?

A. Distribution of copies of the latest HIV/AIDS treatment guidelines to staff, Teaching PHC staff about changes in the latest HIV/AIDS treatment guidelines, Ensuring use of the latest HIV/AIDS treatment guidelines (n=11) no response (n=69)
Q. 1.3.2 Which sources of information are available at the PHC facility to guide prescribing? **A.** Local HIV/AIDS treatment guidelines (n=9), formulary, other text books, electronic text books. Response (n=12) no response (n-72)
Q. 1.3.3 Were you invited for the review and adoption of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=4, 4.6 %), no (n=7, 8.0%), no response (n=73, 83.9%)
Q. 1.3.3.1 If **yes**, what was your specific role in the review and adoption of the latest HIV/AIDS treatment guidelines? **A**. No response
Q. 1.3.4 State the edition and year of publication of the latest HIV/AIDS treatment guidelines **A.** 5th 2016 (n=1) no response (n=84)
Q. 1.4.1 Did you receive the implementation plan for the latest HIV/AIDS treatment guidelines from the HIV/AIDS programme? **A.** Yes (n=8, 9.2%), no (n=4, 4.6 %), no response (n=73, 83.9%)
Q. 1.4.1.1 If **yes**, did you play a role in the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=5, 5.7%), no (n=6, 6.9%), no response (n=76, 84.4%)
Q. 1.4.1.2 If **yes,** describe the role you played in the implementation of the latest HIV/AIDS treatment guidelines? **A.** Disseminate 2016 HIV/AIDS guidelines to the rest of the staff, the VHWs, HC committee and community, giving feedback to others, workshop. Response (n=3), no response (n=84)
Q. 1.4.2 Was there any training for the staff members in the PHC facilities for the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=8, 9.2%), no (n=1, 1.1%), no response (n=77, 88.5%)
Q. 1.4.2.1 If **yes**, describe how the training is carried out. **A.** Done by DHMT, it was done as a one day facility level feedback and also at the district level as a one week workshop, on site meeting, consulting a meeting and exploring how drugs are prescribed, the training takes about a week starting with drugs, mode of action, side effects, second line. Response (n=8) no response (n=77)
Q. 1.4.2.2 If **no**, how are the health professionals informed about the changes in the latest HIV/AIDS treatment guidelines? Skip question **A**. No response
Q. 1.4.3 Were the previous HIV/AIDS treatment guidelines fully implemented? **A.** Yes (n=8, 9.2%), no (n=1, 1.1%), no response (n=77, 88.5%)
Q. 1.4.3.1 If yes, which aspects of the previous HIV/AIDS treatment guidelines were fully implemented? **A.** PMTCT, initiation of ART to patients with CD4 count 500 and below, initiation of ART to all pregnant women regardless of CD4 count, we now test and treat, continuation of the same ART regimen which implies to all HIV positive patients. Responses (n=8), no response (n=81)
Q. 1.5.1 In your supervisory capacity at the PHC, do you have task agreements with PHC health practitioners for their performance with regard to care and treatment of HIV/AIDS patients using the latest HIV/AIDS treatment guidelines?

A. Yes (n=6, 6.9%), no (n=4, 4.6%), no response (n=75, 86.2%)
Q. 1.5.1.1 If yes, how do you carry out the performance evaluation? **A.** Supervisory visits, quarterly PHC meeting at district level which evaluates performances and challenges encountered during the quarter. Response (n=5), no response (n=82)
Q. 1.9.1 Do you have a copy of the latest HIV/AIDS treatment guidelines for prescribing? **A.** Yes (n=70, 80.5%), no (n=4, 4.6%), no response (n=10, 11.5%)
Q. 1.9.2 If yes, how often do you use the latest HIV/AIDS treatment guidelines? **A**. Daily (n=60, 69.0%), weekly (n= 5, 5.7), monthly (n=2, 2.3), no response (n=11, 12.6)
Q. 1.9.3 State the edition and year of publication of the latest HIV/AIDS treatment guidelines **A.** 5th edition, 2016
Q. 1.9.4.1 Is there any training about the new changes in the eligibility, diagnosis, care and treatment of HIV/AIDS of the latest HIV/AIDS treatment guidelines? **A**. Yes (n=62, 71.3%), no (n=18, 20.7%), no response (n=6, 6.9%)
Q. 1.9.4.2 If **yes**, describe how the training is carried out **A.** Workshop held, one participant attend workshop and do step down training upon return, Power-point® presentation, testing and treating, by going to the HC and working as groups even to contribute on them. Responses (n=43) no response (n=43)
Q. 1.9.4.3 If **no**, how were you informed about the changes in the latest HIV/AIDS treatment guidelines? **A.** I was informed about changes by colleagues, PREP, ART guidelines, new in the facility, they were posted on nurses' WhatsApp® group and there is no hard copy for recently reviewed guidelines, we were just given the guidelines, counselling use of guidelines, adherence, follow ups, tracking, test and treat, weekly meetings, and presentations done. Responses (n=9), no response (n=78)
Q. 1.9.4.4 Were the previous HIV/AIDS treatment guidelines fully implemented? **A.** Yes (n=64, 73.6%), no (n=10, 11.5%), no response (n=9, 10.3%)
Q. 1.9.5.1 Do you have a task agreement with the PHC manager for your performance with regard to the care and treatment of HIV/AIDS? **A.** Yes (n=42, 48.3%), no (n=26, 29.9%), no response (n=14, 16.1%)
Q. 1.9.5.2 If yes, how is performance evaluation carried out? **A.** Regularly evaluating all the patient treatment guidelines and receiving every aspect in care and also the registers, I draw my own goals in regard to care and treatment, then evaluation is done based on correct implementation of such goals, appraisal form and assessment list, we have daily work plans, we assess if patients care is done according to the guidelines e.g. CD4 count viral load monitoring creatinine clearance, formation of quality improvement project initiated for evaluation, it is done quarterly using quarterly tools, pharmacist check jobs, duties and tasks given to pharm technicians thereafter appreciates forms are filled and each year of submitted, DHMT mentors our facility to ensure we work according to set standards MOH guidelines, it is carried out based on performance and it is done by performance appraisals, MOH partners carry out mentoring process within the facilities. Responses (n=27), no response (n=58)

IMPLEMENTATION DRIVERS

Table 4 Competency drivers assessed at HIV/AIDS programme

HIV/AIDS programme: Questions and answers
Competency drivers
Q. 1.2.2 Are all the positions filled? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.2.1 If no, which positions are not filled? (Skip question) **A.** No response
Q. 1.2.3.1Were you involved in the implementation of 2016 treatment guidelines? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.3.2 Did you receive training about 2016 treatment guidelines? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.3.3 Who provided training? **A.** WHO. Response (n=5), no response (n=0)
Q. 1.2.3.4 Length of training **A.** 1 week. Response (n=5), no response (n=0)
Q. 1.2.3.5 Topics covered for the training **A**. Overview of the HIV/AIDS treatment guidelines, comparison between the previous and the new HIV/AIDS treatment guidelines, new changes in the new HIV/AIDS treatment guidelines, new logistical requirements (a drug with low temperature storage) in the new HIV/AIDS treatment guidelines., new clinical management requirements (e.g. regimen changes, laboratory test, and monitoring aspects) in the new HIV/AIDS treatment guidelines), new staff requirements (e.g. laboratory personnel who know how to operate new test machines), importance of adherence to current treatment guidelines, implementation plan of HIV/AIDS treatment guidelines. Response (n=5), no response (n=0)
Q. 1.2.3.6 Was there training evaluation and certification on the implementation of the HIVAIDS treatment guidelines? i) Were you given an evaluation form to complete after the training? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.3. 7 Were you trained to train others on the implementation of the HIVAIDS treatment guidelines? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.3.8 Did you train others on the implementation of the HIVAIDS treatment guidelines? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.2.3.9 Reasons for not training others (NB skip question) **A.** No response. Response (n=5), no response (n=0)
Q.1.4.2 Which level of healthcare is the area of focus for the implementation of the latest HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities**?** **A.** Primary health care. Response (n=5), no response (n=0)
Q. 1.4.3 Was there **training** of healthcare professionals at PHC as area of focus? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.4.3.1 If yes, which topics were covered in the training when the latest HIV/AIDS treatment guidelines were implemented? **A.** Changes in the treatment guidelines, clinical management requirements, new laboratory tests. Response (n=5), no response (n=0)

Q. 1.4.3.2 If no, how are the health facilities staff informed about the changes in the latest HIV/AIDS treatment guidelines**?** (skip question) **A.** No response.
Q. 1.4.5 At the DHMT level, is there a staff member in each district who is assigned the **responsibility** of the implementation of HIV/AIDS treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4)
Q. 1.4.5.1 If no, is the implementation of latest HIV/AIDS treatment guidelines regarded as part of the routine workload of assigned staff member at the DHMT? Skip question. **A**. No response
Q. 1.4.5.2 If no, please state what happens to their routine workload at the DHMT when the staff member has to spend more time with the implementation of HIV/AIDS treatment guideline? Skip question. **A**. No response
Q. 1.5.1 Do you have task agreements with healthcare professionals implementing treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4)
Q. 1.5.1.1 If yes, how do you carry out performance evaluation? **A.** Through report sent to MOH. Response (n=1), no response (n=4)

Table 5 Competency drivers assessed at DHMT level

DHMT: Questions and answers
Competency drivers

Q. 1.2.2 Are all positions filled? **A.** Yes (n=9, 33.3%), no (n=0, 0.0%), no response (n=18, 66.7%)
Q. 1.2.2.1 If no, which positions are not filled? **A.** Driver, eye department Response (n=4), no response (n=23)
Q. 1.2.2.2 What are the reasons for not filling the vacant post? **A.** Budget problems, position is not yet advertised**.** Response (n=3), no response (n=24)
Q. 1.2.2.3 Who carries out the duties attached to the vacant post? **A.** Public health nurse, senior counsellor and accountant. Response (n=4), no response (n=23)
Q .1.2.3 If yes, did you have a role to play in the **implementation** of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=8, 29.6%), no (n=19, 70.4%), no response (n=0, 0.0%)
Q. 1.2.3.1 If yes, did you receive any training specific to the implementation of the treatment guidelines in the HIV/AIDS programme? **A.** Yes (n=15, 55.6%), no (n=9, 33.3%), no response (n=3, 11.1%)
Q. 1.2.3.2 If yes, who provided the training? **A.** MOH, EGPAF. Response (n=15), no response (n=12)
Q. 1.2.3.3 What was the duration of training? **A.** Less than 1 week (n=4), 1 week (n=10), 2 weeks (n=1)
Q. 1.2.3.4 Topics covered for the training **A**. Overview of the HIV/AIDS treatment guidelines, comparison between the previous and the new HIV/AIDS treatment guidelines, new changes in the new HIV/AIDS treatment guidelines, new logistical requirements (a drug with low temperature storage) in the new HIV/AIDS treatment guidelines., new clinical management requirements (e.g. regimen changes, laboratory test, and monitoring aspects) in the new HIV/AIDS treatment guidelines), new staff requirements (e.g. laboratory personnel who know how to operate new test machines), importance of adherence to current treatment guidelines, implementation plan of HIV/AIDS treatment guidelines. Response (n=15), no response (n=12)
Q. 1.2.3.5 Evaluation and certification of the training on HIV/AIDS treatment guidelines implementation (given an evaluation form to complete after the training, certification provided to you after the training, proof of attendance provided to you after the training) **A.** Yes (n=4, 14.8%), no (n=10, 38.0%), no response (n=13, 48.1%)
Q. 1.2.3.6 Were the personnel trained to train others with regard to the most recent (latest) HIV/AIDS treatment guidelines implementation? **A.** Yes (n=5, 18.5%), no (n=9, 33.3%), no response (n=12, 44.4%)
Q. 1.2.3.7 If yes, was there any training before review of the most recent (latest) HIV/AIDS treatment guidelines? **A.** Yes (n=6, 22.2%), no (n=4, 14.8%), no response (n=13, 48.1%)
Q. 1.2.3.8 If not, what was the reason for not providing training before the review of the new HIV/AIDS treatment guidelines? **A.** Time and resources not allocated, training was not a training of trainers. Response (n=2), no response (n=25)
Q 1.3.1 Were you **involved in** the **review** of 2016 treatment guidelines? **A** Yes (n=3, 11.1%), no (n=22, 81.5%), no response (n=2, 7.4%)

Q. 1.3.1.1 If yes, list the sources of information that were used when you reviewed the HIV/AIDS treatment guidelines? **A**. Co-infections in HIV/TB guidelines, previous HIV/AIDS guidelines, reporting tools used, DHIS 2 system. Response (n=3), no response (n=24)
Q.1.4.2 Which level of healthcare is the area of focus for the implementation of the latest HIV/AIDS treatment guidelines for both the Government of Lesotho and CHAL facilities**?** **A.** Primary health care. Response (n=13), no response (n=14)
Q. 1.4.3 Was there any training of the staff members from the area of focus on the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=13, 48.1%), no (n=0, 0.0%), no response (n=14, 81.9%)
Q. 1.4.3.1 If yes, describe how the training was carried out. **A**. 5 days' workshop, monthly supervision, on site trainings, step down training in the form of workshops, training in the districts for hospital staff clinics and all health providers staff for changes in 2016 guidelines. Response (n=12), no response (n=15)
Q. 1.4.3.2 If no, how were health professionals informed about the changes in the latest HIV/AIDS treatment guidelines? **(skip question)** **A.** No response
Q. 1.5.1 In your supervisory capacity at the PHC, do you have a task agreement with PHC managers for their performance with regard to the implementation of HIV/AIDS treatment guidelines? **A.** Yes (n=17, 63.0%), no (n=6, 22.2%), no response (n=4, 14.8%)
Q. 1.5.1.1 If yes, how do you carry out performance evaluation of PHC managers on the implementation of the latest HIV/AIDS treatment guidelines? **A.** Check prescriptions and see if guidelines are followed, I check how many patients were referred to the facility to be linked to care and initiated on art and whether SOP was followed, by mentoring the facility staff helping them to implement the changes, receiving of the PHC quarterly reports, monitor consumption against number of patients affected regimen, if there is a new guideline change we monitor the consumption of the new regimen being introduced, their achievement is measured against 90/90/90 target, assess and evaluate the work-plan of the PHC manager and identifying any gaps and resolve them, by forming quality improvement projects where we will be able to monitor if the project passes or fails at the end and if the staff are able to finish the project within the planned time, check number of patients put of ART monthly, using MOH assessment tool. Response (n=17), no response (n=10)
Q. 1.5.1.2 If not, how do you assess performance of PHC managers with regard to the implementation of the latest HIV/AIDS treatment guidelines? **A.** Provide them with the latest guidelines and supervise them on the use, according to the guidelines that provide the issues or areas to be assessed, ART registers are used to assess performance, no assessment done that is specific to performance, number of clients who tested HIV positive, number of clients who initiated on ART and those on HIV treatment. Response (n=7), no response (n=20)

Table 6 Competency drivers assessed at PHC level with PHC managers

PHC managers: Questions and answers
Competency drivers
Q 1.2.3 Are all positions filled? **A.** Yes (n=27, 31.0%), no (n=17, 19.5%), no response (n=40, 46.0%)
Q. 1.2.3.1 Which ones are not filled? **A.** Pharmacist, medical officer, nurse manager, dentist and lab technician, nursing sister, cleaner, gardener, nurse clinician, environmental health inspector. Response (n=20), no response (n=63)
Q. 1.2.3.2 Who carries out their duties **A** Nurses and counsellors, nurses, nursing assistant, all available staff (nursing sister and nursing assistants). Response (n=22), no response (n=64)
Q. 1.2.5 Are the PHC healthcare practitioners **trained** on how to implement new changes in the latest HIV/AIDS treatment guidelines? **A.** Yes (n=45, 51.7%), no (n=2, 2.3%), no response (n=39, 44.8%)
Q. 1.2.5.1 If yes, who provided the training? **A.** HIV/AIDS programme (n=13), development partners (n=16), consultant (n=3), others
Q. 1.2.5.2 What was the duration of training? **A.** Less than one week (n=7), one week (n=29), two weeks (n=6), other (4)
Q. 1.2.5.3 Topics covered in the training

A. Early diagnosis, exposed infant prophylaxis, test and treat, first line and second line regimens, PMTCT including infant diagnosis and monitoring, guidelines, exposed infant prophylaxis, SRH, laboratory, ARV drug regimen and side effects, integrated management of HIV/AIDS adult and paediatric illnesses, transmission of HIV life cycle, types of HIV regimens, mode of action, HIV testing services. Response (n=31), no response (n=56)
Q. 1.2.5.4 Was there training **evaluation and certification** on the implementation of the HIVAIDS treatment guidelines? i) Were you given an evaluation form to complete after the training? A. Yes (n=19, 21.8%), no (n=4, 4.6%), no response (n=41, 47.1%)
Q. 1.4.2 Was there any **training** for the staff members in the PHC facilities for the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=8, 9.2%), no (n=1, 1.1%), no response (n=77, 85.5%)
Q. 1.4.2.1 If yes, describe how the training is carried out. **A.** Consulting a meeting and exploring how drugs are prescribed, on site meeting, workshop, the training takes about a week starting with drugs, mode of action , side effects, second line interactive training session which includes nurses, pharmacists and lab techs. Response (n=8), no response (n=77)
Q. 1.4.2.2 If no, how are the health professionals informed about the changes in the latest HIV/AIDS treatment guidelines? (skip questions) **A.** No response
Q. 1.9.4.1 Is there any **training** about the new changes in the eligibility, diagnosis, care and treatment of HIV/AIDS of the latest HIV/AIDS treatment guidelines? **A.** Yes (n=62, 71.3%), no (n=18, 20.7%), no response (n=7, 8.0%)
Q. 1.9.4.2 If yes, describe how the training is carried out **A**. Workshop (n=24), on-site training (n=12), training of trainers, WhatsApp® message, presentations.
Q. 1.9.4.3 If no, how were you informed about the changes in the latest HIV/AIDS treatment guidelines? **A**. I was informed about changes by colleagues, they were posted on nurse WhatsApp® group and there is no hard copy for recently reviewed guidelines, we were just given the guidelines, there was an onsite training held at the workplace, by nurses who came to the workshop. Response (n=9), no response (n=78)
Q. 1.4.3 Were the previous HIV/AIDS treatment guidelines fully implemented? **A.** Yes (n=8, 9.2%), No (n=1, 1.1%), no response (n=77, 85.5%)
Q. 1.4.3.1 If yes, which aspects of the previous HIV/AIDS treatment guidelines were fully implemented? Indicate more than one if necessary. **A.** PMTCT, initiation of ART to patients with CD4 count 500 and below, initiation of ART to all pregnant women regardless of CD4 count, monitoring side effects of drugs, IRS, drug to drug interaction, CD4 count per cent and treatment failure, the first line of ART, if patient not responding, start second line, PEP, continuation of the same ART regimen which applies to all HIV positive patients. Response (n=6), no response (n=81)
Q. 1.9.4.4 Were the previous HIV/AIDS treatment guidelines fully implemented? **A**. Yes (n=64, 73.6%), no (n=10, 11.5%), no response (n=9, 10.3%)
Q. 1.9.5.1 Do you have a **task agreement** with the PHC manager for your performance with regard to the care and treatment of HIV/AIDS?

A. Yes (n=42, 48.3%), no (n=26, 29.9%), no response (n=14, 16.1%)
Q. 1.9.5.2 If yes, how is performance evaluation carried out? **A.** Regularly evaluating all the patient treatment guidelines and receiving every aspect in care and also the registers, I draw my own goals in regard to care and treatment, then evaluation is done based on correct implementation of such goals, appraisal form and assessment list, we have daily work plans, we assess if patients care is done according to the guidelines e.g. CD4 count viral load monitoring creatinine clearance, formation of quality improvement project initiated for evaluation, it is done quarterly using quarterly tools, pharmacist check jobs, duties and tasks given to Pharm techs thereafter appreciates forms are filled and each year of submitted, DHMT mentors our facility to ensure we work according to set standards MOH guidelines, it is carried out based on performance and it is done by performance appraisals, MOH partners carry out mentoring process within the facilities. Responses (n=27), no response (n=58)

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Table 7 Leadership drivers at the HIV/AIDS programme

HIV/AIDS programme – questions and answers
Leadership drivers
Q. 1.2.1 Please indicate or include on the organogram of the Ministry of Health the positions allocated for the HIV/AIDS programme? **A.** DHMT and PHC were indicated. Response (n=5), no response (n=0)
Q. 1.7.1 Did you supervise the subsidiary on the implementation of the HIVAIDS treatment guidelines? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.7.1.1 Describe supervision **A.** Supervision is done quarterly, however, not regular, there is supervision tool used, monitoring of 90/90/90. Response (n=2), no response (n=3)

Q. 1.7.1.2 Supervision interval **A.** Quarterly. Response (n=5), no response (n=0)
Q. 1.7.2 Did you provide/receive feedback after every? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.7.2.1 Describe how you provide/receive feedback **A.** Send them reports, conduct meeting after site visit, and share quarterly report. Response (n=5), no response (n=0)
Q. 1.7.3 Describe how you resolve conflict? **A.** Conflict resolution during supervision, use ART guidelines to clear arising arguments, assistance of implementing partners to solve immediate problems. Response (n=5), no response (n=0)
Q.1.7.3.1 If method of conflict resolution fails what do you do? **A.** Take it to be discussed with DHM and senior management. Response (n=1), no response (n=4)
Q. 1.7.3.2 How do you maintain working relation after resolved conflict? **A.** Follow-up, mutual agreement is ensued. Response (n=4), no response (n=1)
Q. 1.7.3.3 How do you maintain working relation after unsolved conflict? **A.** Monitoring of 90/90/90. Response (n=3), no response (n=2)
Q. 1.7.4 Do you motivate staff? **A.** Yes (n=5), no (n=0), no response (n=0**)**
Q. 1.7.4.1 How you motivate staff **A.** We congratulate them, and ask them to continue doing a good, supportive and mentoring supervision, quarterly report sharing to monitor performance in each district. Response (n=5), no response (n=0)
Q.1.7.5 Do you reward good performance? **A.** Yes (n=5), no (n=0), no response (n=0)
Q. 1.7.5.1 How you reward good performance **A.** Not done. Response (n=3), no response (n=2)
Q. 1.7.5.2 How you handle poor performance? **A.** We ask poorly performing district to do a study tour in a district that performs well to learn how to perform better. Refresher training are conducted and mentorship programmes**.** Response (n=5), no response (n=0)

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Table 3-19 Leadership drivers at the DHMT

DHMT level – questions and answers
Leadership drivers
1.2.2 Are all the positions filled? **A.** Yes (n=6, 22.2%), no (n=4, 14.8%), no response (n=17, 63.0%)
1.7.1 Do you supervise PHC facilities on the implementation of the latest HIVAIDS treatment guidelines? **A.** Yes (n= 23, 85.2%), no (n=3, 11.1%), no response (n=0, 0.0%)
Q. 1.7.1.1 If yes, describe the supervision of PHC level on the implementation of the latest (most recent) HIVAIDS treatment guidelines you provide. **A.** Check use and adherence to treatment guidelines, drug supply management, check records and registers, check if routine tests have been carried out, check patients adherence and monthly medicine pick-up. Response (n=15), no response (n=11)
Q. 1.7.1.2 How often is the supervision carried out? **A**. Less than one month (n=9), 1 - 3 months (n=11), Other, please specify (n=2)
Q. 1.7.1.3 Did you provide feedback after every supervisory visit **A.** Yes (n= 23, 85.2%), no (n=3, 11.1%), no response (n=1, 3.7%)
Q. 1.7.1.5 If yes, describe how you provide feedback to the all relevant staff members after every supervisory visit**.** **A.** Feedback in provided by sending reports back to the facilities outline, conduct PHC feedback meeting for facilities, use of WhatsApp® group to give feedback to all health teams, give feedback immediately after assessment supervision. Response (n=25), no response (n=2)
Q. 1.7.2 Describe how you usually resolve conflict situations or challenges related to the implementation of the HIV/AIDS treatment guidelines with PHC staff? **A.** Motivate, leadership ethics, continue working as usual, staff rotation, supervision, avoid causes of conflict, professionalism, progressive mentorship, invite programme manager from national. Response (n=22), no response (n=5)
Q.1.7.2.1 If your usual method of conflict resolution fails what do you do? **A.** Intervention from another level is sought, I ask for expertise of my supervisor to intervene, consult with HR and if possible a written warning, stick to work and always to be professional, I involve management of DHMT, make a meeting and clarify guidelines. Response (n=19), no response (n=8)
Q. 1.7.2.2 How do you maintain working relation after resolved conflict? **A.** By staff motivation encouraging team work, I apply leadership ethics, respect, and humility, staff rotation, regular visit, frequent supervision, progressive mentorship. Response (n=17), no response (n=10)
Q. 1.7.2.3 How do you maintain working relation after unsolved conflict?

A. I make sure that all conflict is resolved, referral to a higher level, I give more tasks, frequent visits to the facility to monitor if agreed practices are carried out, if the matter cannot be resolved the staff member is removed from the position until the matter is resolved, by a close supportive supervision and mentorship, monitor actionable items that were agreed upon. Response (n=14), no response (n=12)
Q. 1.7.3 Describe how you motivate PHC staff at your district regarding the implementation of f HIV/AIDS treatment guidelines? **A.** By giving feedback and appreciating the work, by giving motivational feedback and appraising staff on a job well done, give a reward for best performing to motivate others, congratulate on good performance, giving feedback (negative-positive), by making sure that courses as per workers are allowed and resolve it if possible, giving the best performing facility a trophy for selected indicators, PHC meeting the best performing gets present, off site workshop and transport reimbursement, by conducting frequent mentorship. Response (n=21), no response (n=6)
Q. 1.7.4 Describe how you reward good performance of PHC staff at your district regarding the implementation of f HIV/AIDS treatment guidelines? **A.** Congratulate, encourage, praise, appreciate good work done, during PHC meetings after all facilities have presented they are avoided afterwards, in the performance based financed they get more points every quarter, giving presents to the best performers, performance based financing is done(PBF). Response (n=21), no response (n=6)
Q. 1.7.4.1 Describe how you handle poor performance in the implementation of HIV/AIDS treatment guidelines in the PHC facilities at your district **A.** Find out when the problem arose and discuss the problem with the concerned parties, liaise with implementers on the problems influencing the poor performance and come up with strategies on how to improve upon such weaknesses, provision of more supervision and teamwork, visit the facility often, we give extra support to the facility, try to find out the bottlenecks poor staffing, distance, providing frequent mentoring in areas of need, learning and sharing meetings where everyone is able to share with others on how they work at the facility, their success and challenges. Response (n=23), no response (n=4)

Table 8 Leadership drivers at the PHC level

PHC managers – questions and answers
Leadership drivers
Q. 1.7.1 Do you supervise PHC staff on the care and treatment of HIV/AIDS patients? **A**. Yes (n=13, 13.8%), no (n=0) no response (n=75, 86.2%).
Q. 1.7.1.1 Describe supervision **A.** Step down training, guidelines are followed properly, through staff meeting and daily supervision, attend group and individual health education sessions, random check on initiated patients bukana, regular check of registers on ART, tally and appointment, clinical meetings, monitor the samples send to laboratory, monitor that correct regimens are given to patients and they understand it, three times a week if possible. Response (n=10), no response (n=77)
Q. 1.7.1.2 Supervision interval **A**. Less than one month (n=9), 1 – 2 months (n=2)

Q. 1.7.1.3 do you provide feedback to the PHC professionals after every supervision
A. Yes (n=4, 4.6%), no (n=1, 1.1%) no response (n=78, 89.7%).

Q. 1.9.7.1 Are you supervised by a PHC manager on the care and treatment of HIVAIDS according to the HIV/AIDS treatment guidelines?
A. Yes (n= 52, 59.8)), no (n=12, 13.8%), no response (n=21, 24.1%)

Q. 1.9.7.2 If yes, describe the nature of supervision provided to you
A. On-site training and support and providing of recent guidelines, clinical meetings check register, daily, monthly, quarterly supervision, visits the facility regularly for verification of data and discussion of the loop holes they found for future correction, reporting method done monthly and weekly, daily morning method of communicating on previous work done, by district management team, clinical meetings, check register, quality improvement meeting, how to properly assess the clients to fill up ART cards and ART registers, monitoring and evaluation, does follow-up if guidelines are being followed by checking registers and files, review of patients health booklets, review of ART records, every consultation must be done using guidelines, update on changes in treatment visiting facilities to ensure that quality service is provided to patients reviewing tools to ensure that DHMT information is correctly filled /entered into records, the manager safeguards that the standards and procedures are met and adhered to, PHC managers advise and lead in the administration, assessment and feedback, random DHMT visits. Response (n=43), no response (n=44)

Q. 1.9.7.3 What is the supervision interval?
A. Daily (n=13), weekly (n=6), monthly(n=25), more than 1 month (12)

Q. 1.9.7.4 Is feedback provided?
A. Yes (n=54, 62.1%), no (n=5, 5.7%), no response (n=23, 26.4%)

Q. 1.9.7.5 If not (given feedback), why not?
A. we are supervised by the district pharmacist, never explained why, I don't know, no supervision is done at the hospital, no reason given by the manager, lack of transport, just got transferred here, HIV/AIDS supervision is done by supporting organisation (EGPAF), AHF, LENASO, LENPWA and ICAP), no regular visits, feedback never given. Response (n=5), no response (n=82)

Q. 1.9.7.6 If yes, what is the time period of feedback after every supervisory visit?
A. After a day(n=22), after a week (n=5), within a month(n=10), after a month(15)

Q. 1.9.7.7 As PHC staff, describe your role in resolving challenges related to the HIV/AIDS care and treatment?
A. Striving to reach the set target, following set standard and qualities, regular monitory and evaluation of patients, providing prophylaxis and management of opportunist infections, we resolve challenges according to the guidelines, those that are above our level of care we refer to the next level, we educate the community about them and what to do when they have challenges, tracking ART patients as a promoting adherence, reminding them of time and period of taking medication, team building, give health education support HIV/AIDS patient, improve and practice shared confidentiality, by departmental meetings and sharing of knowledge (experiences), conducting departmental meetings, encouraging staff to engage in self-developmental studies (online studies, research projects and formal learning) participating in clinical meetings, in unsure cases I consult colleagues, supervisor and or MOH in extreme cases we also discuss issues among ourselves casually or in the meetings at our department, health

education to the community about HIV/AIDS care and treatment . Continuous counselling to people who are declining treatment, continuous support to all patients enrolled in HIV/AIDS care and treatment so as to avoid defaulters and lost to follow up, I refer to higher level any challenges encountered and sometimes we discuss the matter with the doctor telephonically, dispensing ARVs, public gatherings, training VHWs on HIV and PMTCT and PrEP. Response (n=55), no response (n=25)

Q. 1.9.7.8 How do you maintain working relations after a resolved conflict among the staff members?

A. talking problem over and deal with it like professionals, at the discussion we reach the consensus that is best for both parties, patients and facility that help us to have conducive working environment, dealing with a problem like professionals and maintaining a rapport, we maintain them harmoniously, encouraging team spirit, openness about each other's feelings on the incident as course of conflict, confrontation, not holding issues, just continue with daily work, by monitoring staff, give praise where is dues and communicate every issues, accept constructive criticism, by continuous supervision of staff members, by trying to forget what happened, entertaining staff, praising staff, motivate them, regular reporting, keeping Godly love and work in peace, prevent conflict, being reminded about our role, ensuring that both parties reach a mutual agreement, the other member who is in the wrong apologises to the wronged, follow upon agreed resolutions, after conflict resolution come up with strategies that will stop it from occurring, talk with the other person focus on behaviours and events not on personalities, listen carefully identify points of agreement and disagreement, prioritise area of conflict , develop a plan to work on each conflict, follow through on your plan, build on your success. Response (n=39), no response (n=48)

Q. 1.9.7.9 How do you maintain working relations after an unsolved conflict among staff members?

A. Call for the third party to intervene, we never have unresolved work conflicts, debriefing sessions among the staff, counselling sessions, urge to talk about whether the person for id listening to one me or not, but in the case I read the incident as intentional, I omit discussion and act as if things are normal, give them time to understand, we try to incorporate our seniors to try resolve if there are unresolved issues, help staff to keep working environment as of for patients expense and leave issues behind and move on, discipline, continuous supervision and counselling of the members involved, get together activities team building activities and to come to a compromise for the sake of the client, ask them to communicate if there is a problem, follow-up, same as above without taking sides between conflicting staff members, failure to bring the conflict to stop results in separating involved parties e.g. internal transfer until the conflict is resolved, yes professional, promoting good work relationships, always ensure that we get a common ground, workable solution, solve problems with patience and respect, ensure that meetings are held to resolve conflict and all parties involved are able to express themselves, figure that there is mediation between fighting people, restart conflict management procedure so as to know the source of conflict. Response (n=38), no response (n=49)

Q. 1.9.7.10 As PHC staff, are there activities done to motivate you to do your duties?

A. Yes (n=51, 58.6%), No (n=12, 13.8%), no response (n=20, 23.0%)

Q. 1.9.7.10.1 If not, why not?

A. Private facilities do not do, not knowing why, maybe it's a profit making facility for their shareholders and not for workers, they are not motivated lack of funds, because I am hired by a partner, we don't know, staff members are given bonuses quarterly to motivate them do their work better. Response (n=9), no response (n=78)

Q. 1.9.7.10.2 If yes, describe how PHC staff members are motivated at the work place?

A. Appraisal is given where we did well and feedback given, there is performance based funding where money is given quarterly and also there are individual awards at the end of the year, thanking them when they have performed well, taking them out a picnic paying them, team building exercises, daily meetings among staff members, being motivated by world aids day whereby we get caps, hats, and t-shirts and the public are invited to join fun-walks, provide lunch and other incentives, refresher trainings. Response (n=40), no response (n=47)

Q. 1.9.7.11 Is good performance in the implementation of HIV/AIDS treatment guidelines rewarded?

A. Yes (n=28, 32.2%), No (n=36, 41.4%), no response (n=17, 19.5%)

Q. 1.9.7.11.1 If not, why not?

A. In cases where the patient was given the wrong medication the assessment for possible side effects is done, don't know, not sure, but any motivational presents, fear of discrimination, lack of funds, it's part of our job, no money to buy those awards, reward is given to the person on the basis of general good performance not specifically HIV/AIDS treatment guidelines implementation, only to PIH, to the facilities are motivated, guidelines are only there to guide us, staff motivation. Response (n=24), no response (n=57)

Q. 1.9.7.11.2 If yes, describe how good performance regarding the care and treatment of HIV/AIDS patients is rewarded at the PHC facility

A. In quarterly meetings where our data will be shared with others and will be allowed to share the experiences with the clinic, mother baby packs that are given to pregnant women who have tested for HIV, other methods of reward are still being revised at the facility level, there is nothing given year but good performance is appreciated by patients and community as well as ministry, good quality of life of the patients and hence less cases of HIV/AIDS especially if patients viral load is suppressed, PBF given quarterly, we are given bonus, go on trip together, patient adherence to treatment, the good performance regard to the patients being stable and not progressing to the stage of AIDS, staff meetings to address burning issues. Response (n=22), no response (n=61)

Q. 1.9.7.11.3 Describe how poor performance regarding the care and treatment of HIV/AIDS patients is handled.

A. Never seen it done, we discuss the performance and make quality improvement plans to measure our performance in regard to the current problem, encouraging use of guidelines, work as a team for consultation and work, workshop were held, in-service on-site training on how better can staff manage HIV/AIDS patients, the DHMT team usually comes to mentor and support given where needed, advice is usually given and use of guidelines recommended, adherence monitoring, counselling, monitoring of bloods to monitor, treatment failure, check drug sensitivity, nothing much just frequent supervision, the real problems is ruled out and solved, tracking by VHWs, LeNASO, phone tracking nurse, through assessment of SIMS, the health facility was given a

certificate for good performance, through clinical meetings to encourage and update staff on how to improve performance regarding the care and treatment of HIV/AIDS, we open projects to attend the issue and correct it, they are given 2 weeks supply and we continue with enhanced adherence counselling, default from treatment, annual salary increase and PBF, staff meetings to discuss attitudes, patients are educated and reassured and cases are discussed in clinical presentation and resolution, workable and achievable solutions. Response (n=35), no response (n=49)

Q. 1.7.2 Describe how you usually resolve conflict situations or challenges related to the implementation of HIV/AIDS care and treatment with PHC staff?

A. We have monthly meetings and one on one meeting where we discuss our day to day work and find a solution that we all agree to, give them time to resolve these issues, call the second person to witness and give advice, referral, by encouraging the staff to really ask questions if they don't understand and praising them for their participation in the care of the patients and how best they can give them treatment. Response (n=20), no response (n=63)

Q. 1.7.2.1 If you're usual method of conflict resolution fails what do you do?

A. We usually contact medical officer who are responsible for ART in hospitals telephonically, refer to DHMT HIV/AIDS programme officer or district manager, call that certain person to show where something has gone wrong, hold meetings , address conflict separately, direct confrontation- make them air their views, stay professional. Response (n=8), no response (n=79)

Q. 1.7.2.2 How you maintain relation after conflict?

A. By developing a team spirit and ensuring the staff that proper management of patients everyone's responsibility challenges as well so that if they emerge again there is a need to share, I always applaud them when they did a good job and encouraged to continue. Also we work hand in hand so the where there is a gap we can assist. Response (n=7), no response (n=80)

Q. 1.7.2.3 How do you maintain relations with unresolved conflict?

A. By giving incentive quarterly through PBF, by discussing together the treatment guidelines, tell them to keep up the good work, by developing a team spirit and assuring the staff that proper management is everyone's responsibility and challenges as well so that if they emerge again there is need to share. Response (n=3), no response (n=84)

Q. 1.7.3 Do you motivate staff?

A. Yes (n=9, 10.3%), No (n=1, 1.1%), no response (n=77, 88.5%)

Q. 1.7.3.1 If not why not?

A. By giving incentive quarterly through PBF, by discussing together the treatment guidelines, tell them to keep up the good work, by developing a team spirit and assuring the staff that proper management is everyone's responsibility and challenges as well so that if they emerge again there is need to share. Response (n=2), no response (n=85)

Q. 1.7.3.2 if yes, describe how you motivate staff at PHC

A. Staff retreat and outings, offer incentives in a form of money/ present to the best worker of the month, we issue certificate of appreciation, just acknowledge them through written report as a way of appreciating them. Response (n=9), no response (n=78)

Q. 1.7.4 Do you reward good performance

A. Yes (n=8, 9.2%), No (n=2, 2.3%), no response (n=76, 87.4%)
Q. 1.7.4.1 if not why not **A**. Fear of discouraging the other staff, by driving where one is having a problem and go through guidelines together to agree to some misunderstanding, we handle after work sessions using HIV/AIDS treatment guidelines, just acknowledge them through a written report as a way of appreciating them, we are doing what we are hired to do. Response (n=3), no response (n=84)
Q. 1.7.4.2 describe how you handle good performance **A**. Staff retreat and outings, offer incentives in a form of money/ present to the best worker of the month, we issue certificate of appreciation, just acknowledge them through written report as a way of appreciating them. Response (n=7), no response (n=80)
Q. 1.7.4.3 describe how you handle poor performance **A**. By holding weekly meetings, continuous support and follow up, ensuring the guidelines are always accessible and encourage usage, we handle after work sessions using HIV/AIDS treatment guidelines, workshops and other refresher trainings. Response (n=8), no response (n=79).

Table 9 organisation drivers at the HIV/AIDS programme

HIV/AIDS programme – Questions and answers
Organisation drivers
Q. 1.4.4 Was there implementation research planned to go hand-in-hand with the implementation of the latest HIV/AIDS treatment guidelines? **A**. Yes (n=1), no (n=0), no response (n=4)
Q. 1.4.4.2 If yes, how often is the operational research carried out? **A**. Once a year. Response (n=1), no response (n=4)
Q. 1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines? **A.** Yes (n=1), no (n=0), no response (n=4)
Q.1.6.1 Is the health information reporting system in all MOH and CHAL facilities paper or computer-based? **A**. Both paper and electronic based data. Response (n=5), no response (n=0)
Q. 1.6.2 Do you receive reports from PHC? **A**. Yes (n=5), no (n=0), no response (n=0)
Q. 1.6.2.1 Please describe what is entailed in the HIV/AIDS treatment report from the PHC facilities (both OPD and ART clinics) received by HIV/AIDS Programme? **A**. Number of clients tested for HIV, number of clients who are positive, number of clients on ARVs, number of clients newly diagnosed, number of clients who refused treatment. Response (n=2), no response (n=3)
Q. 1.6.3 What type of data are included in the reports from PHC facilities? **A**. No. of people tested for HIV, no. of patients on ARV treatment by gender, no. of patients on ARV treatment by age category, no. of pregnant women tested and enrolled into care, type of ARV regimens used, no of rape cases, no. of cases for accidental needle pricks, no. of cases given pre-exposure prophylaxis, no of laboratory tests done, reported adverse drug reactions, toxicities and stock-outs. Response (n=5), no response (n=0)
Q. 1.6.4 How are reports submitted? **A**. Reports are sent by PHC facilities as hard copies and electronic copies, reports are sent through DHMT as hard copies and electronic copies. Response (n=5), no response (n=0)
Q. 1.6.5 Who collects data? **A**. AIDS officer, data clerks, M&E officers. Response (n=5), no response (n=0)
Q. 1.6.6 Who supervises daily data collection? **A**. M&E officers, Information officers, Nurses. Response (n=5), no response (n=0)
Q. 1.6.7 Use of data collected from the PHC **A**. Analyse and report writing, quantification, analyse verification, compilation, sharing with districts. Response (n=5), no response (n=0)

Table 10 Organisation drivers at the DHMT

DHMT – Questions and answers
Organisation drivers
Q.1.6.1 Is the health information reporting system in all MOH and CHAL facilities paper or computer-based? **A.** Both paper (n= 5) and electronic based data (n=21).
Q. 1.6.2 Do you receive reports from PHC? **A.** Yes (n= 25, 92.6%), no (n=0, 0.0%), no response (n=2, 7.4%)
Q. 1.6.3 What type of data are included in the reports from PHC facilities? **A.** No. of people tested for HIV, no. of patients on ARV treatment by gender, no. of patients on ARV treatment by age category, no. of pregnant women tested and enrolled into

care, type of ARV regimens used, no of rape cases, no. of cases for accidental needle pricks, no. of cases given pre-exposure prophylaxis, no of laboratory tests done, reported adverse drug reactions, toxicities and stock-outs. Response (n=27), no response (n=0)
Q. 1.4.5/1.6.4 How are reports submitted **A.** Reports are sent by PHC facilities as hard copies and electronic copies, or sent through DHMT as hard copies and electronic copies. Response (n=12), no response (n=15)/ Response (n=26), no response (n=1)
Q. 1.4.6/1.6.5 Who is allowed to collect and capture data at the PHC facility? **A.** Data clerks and nurses, record assistant, pharmacy personnel. Response (n=12), no response (n=15)/ Response (n=27), no response (n=0)
Q. 1.4.7/1.6.6 Who is supposed to provide daily supervision on data quality and management, and HIV treatment reporting at PHC level? **A.** DHMT, nurse in-charge, district AIDS officer, district health information officer, quality and management committees at the facility. Response (n=12), no response (n=15)/ Response (n=27), no response (n=0)
Q. 1.4.8 What do you do with HIV/AIDS treatment reports from PHC? **A.** Use them for decision making, analysed by DHMT and be discussed, sent to HQ after verification and correction, collate and inform the system, DHMT for action, analyse them and give feedback to the facilities, data cleaning and analysis, then data is sent to the health HQ. Response (n=12), no response (n=15)
Q. 1.6.7 How does the DHMT use the HIV/AIDS treatment reports from PHC facilities? **A**. Use to improve HIV/AIDS program and solve problem, it is used to identify the burden of HIV/AIDS in different PHC level and provider proper care, quantification, to analyse facility performance in the districts and challenges meant to prevent good performance, for planning purposes and budget. Response (n=27), no response (n=0)t
Q. 1.4.4 Was there implementation research planned to go hand-in-hand with the implementation of the latest HIV/AIDS treatment guidelines? **A.** Yes (n= 9, 33.3%), no (n=3, 11.1%), no response (n=15, 55.6%**)**
Q. 1.4.4.1 if no, describe how you measure success or failure regarding the implementation of HIV/AIDS treatment guidelines? **A.** Use of monitoring and evaluation tool, monthly reports, the increase in the quantities of drugs requested, use of monthly report to DHMT from implementing facilities. Response (n=5), no response (n=22)
Q 1.4.4.2 If yes, how often was operational research carried out? **A**. Yearly, monthly supervision, daily. Response (n=4), no response (n=23)
Q. 1.4.4.3 Are the results of operational research used for future reviews of HIV/ADS treatment guidelines? **A.** Yes (n=3, 11.1%), no (n= 1, 3.7%), no response (n=22, 81.5%)

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Table 11 Organisation drivers at the PHC

PHC – Questions and answers
Organisation drivers
Q.1.6.1 Is the health information reporting system in all MOH and CHAL facilities paper or computer-based? **A.** Both paper and electronic based data. Response (n=13), no response (n=74)
Q. 1.9.6.1 Do you prepare reports about the HIV/AIDS care and treatment that you give to patients? **A.** Yes (n=64, 73.6%), no (n=4, 4.6%), no response (n=17, 19.5%)

Q. 1.6.2.1 Please describe what is entailed in the HIV/AIDS treatment report from the PHC facilities (both OPD and ART clinics) received by HIV/AIDS Programme? **A.** Number of clients tested for HIV, number of clients who are positive, number of clients on ARVs, number of clients newly diagnosed, number of clients who refused treatment. Response (n=13), no response (n=74)
Q. 1.6.3/1.9.6.2 What type of data are included in the reports from PHC facilities? **A.** No. of people tested for HIV, no. of patients on ARV treatment by gender, no. of patients on ARV treatment by age category, no. of pregnant women tested and enrolled into care, type of ARV regimens used, no of rape cases, no. of cases for accidental needle pricks, no. of cases given pre-exposure prophylaxis, no of laboratory tests done, reported adverse drug reactions, toxicities and stock-outs. Response (n=13), no response (n=74), / Response (n=66), no response (n=19)
Q. 1.6.4/1.9.6.3 How are reports submitted **A.** Reports are sent by PHC facilities through DHMT as hard copies and electronic copies Response (n=20), no response (n=63)/ Response (n=65), no response (n=18)
Q.1.9.6.4 Do you know what the data coming from PHC facilities are used for? **A.** Yes (n=53, 60.9%) , no (n=7, 8.0%), no response (n=24, 27.6%)
Q. 1.6.5/1.9.6.5 Who collects data at the PHC facility? **A.** AIDS officer, data clerks, M&E officers, cleaner, gardener**.** Response (n=64), no response (n=20)
Q. 1.6.6 Who supervises daily data collection? **A.** M&E officers, information officers, nurses**.** Response (n=9), no response (n=78)
Q. 1.9.6.6 Who is supposed to supervise data management and HIV treatment reporting at PHC level? **A.** Nurse in charge, data manager, data clerk, facility ART nurse, PHC coordinator, head of department of ART, HIV/AIDS coordinator, nursing manager, senior nurse and data clerks, nurse, pharmacy tech, counsellor, work as a team to assist record assistants, district information officer, DHMT, PHC director and coordinators. Response (n=52), no response (n=35)

ANNEXURE Q READINESS ASSESSMENT CHECKLIST AND IMPLEMENTATION PLAN

READINESS ASSESSMENT CHECKLIST

	READINESS ASSESSMENT CHECKLIST	Select one
	DEFINED NEED	
1	Have you clearly defined the need that is driving your organization to consider implementing a Readmission Reduction/Care Transitions Immersion Project?	YES □ NO □
2	Is building a strong evidence-based Readmission Reduction/Care Transitions project an appropriate strategy to address your organization's need	YES □ NO □
	READINESS FOR CHANGE	
3	Is now the right time for implementing a Readmission Reduction/Care Transitions project (e.g., it will not compete with other major changes currently being made within your organization)? If your organization is experiencing several changes, it may not be an ideal time to begin a Readmission Reduction/ Care Transitions initiative. Attempting to manage multiple change efforts at one time may degrade your organization's ability and employees' willingness to implement and sustain the quality improvement efforts. The project may be viewed as a distraction rather than a solution	YES □ NO□
.4	Will your organization's leaders support Readmission Reduction/Care Transitions change and effort required to implement and sustain the quality improvement initiative? It is essential that the leaders within your organization actively support and champion Readmission Reduction/Care Transitions project needs and deliverables	YES □ NO□
	TIME, RESOURCES, PERSONNEL	
5	Will your organization provide sufficient staff with the necessary time and resources to support active project participation?	YES □ NO□
6	Will your organization allow time to prepare and continue work on project deliverables?	YES □ NO□
	SUSTAINMENT OF THE CHANGE	
7	Will your organization be willing to measure and assess progress and continuously improve processes	YES □ NO□
8	Will your organization be able to reinforce and reward positive teamwork behaviors and improvements in processes? To become accepted practice, positive teamwork behaviors and improvements in processes and outcomes need to be reinforced and rewarded. Leaders, champions, instructors and coaches should be willing to provide ongoing feedback to others within the organization. Successes need to be formally recognized and showcased throughout the organization.	YES □ NO□

Source:Quality works. (http://web.mhanet.com/SQI/Immersion/Readiness/Readiness_Assessment_0517.pdf

READINESS ASSESSMENT SCORE Number of Yes responses you have selected is 6-8 out of 8: This is likely a good time within your organization to participate in the Readmission Reduction/Care Transitions Immersion Project. As you begin the implementation process, continue to monitor whether the answers to these questions change and keep a close eye on any items to which you answered “no.”

Number of Yes responses you have selected is 4-5 out of 8: Your organization may not be ready on one-third to one-half of the factors. This reduces the likelihood of project success. Evaluate if this is an appropriate time to participate in the Readmission Reduction/Care Transitions Immersion Project. Review the “Tips and Suggestions for Enhancing Organizational Readiness.”

Number of Yes responses you have selected is 1-3 out of 8: Based on your responses, significant work is likely needed to raise the readiness level of your organization. Participation in the Readmission Reduction/Care Transitions Immersion Project could create significant risk that it will not succeed or produce the desired results. Strongly consider before agreeing to participate in the Readmission Reduction/Care Transitions Immersion Project. Also, review the “Tips and Suggestions for Enhancing Organizational Readiness” for ways to enhance your organization’s readiness.

Treatment guidelines Implementation plan